

# THE IRON AGE

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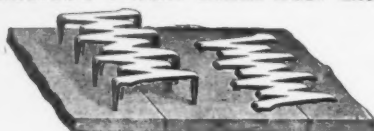
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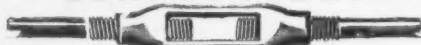
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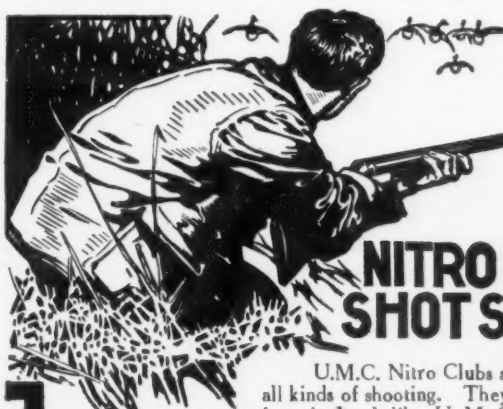
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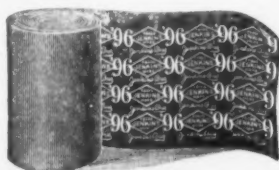
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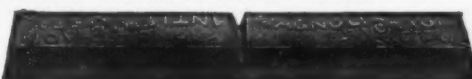


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# THE IRON AGE

New York, Thursday, January 14, 1909.

## The Gary Pig Casting Plant.

### The Heyl & Patterson Machines at the Indiana Steel Company, Gary, Ind.

It is the present practice in large steel plants to carry the operations through in continuous sequence from the ore pile to the finished product. Thus there is saved as

Gary plant of the United States Steel Corporation it was realized that the casting machines are just as important as other units, and they were given equal consideration, with the result that several innovations were adopted. The conditions at Gary will ultimately require that all of the product of 16 blast furnaces may be prepared for shipment. It is the usual practice to provide two pig casting machines for every three furnaces, and, following this idea, the plant is equipped with six machines to

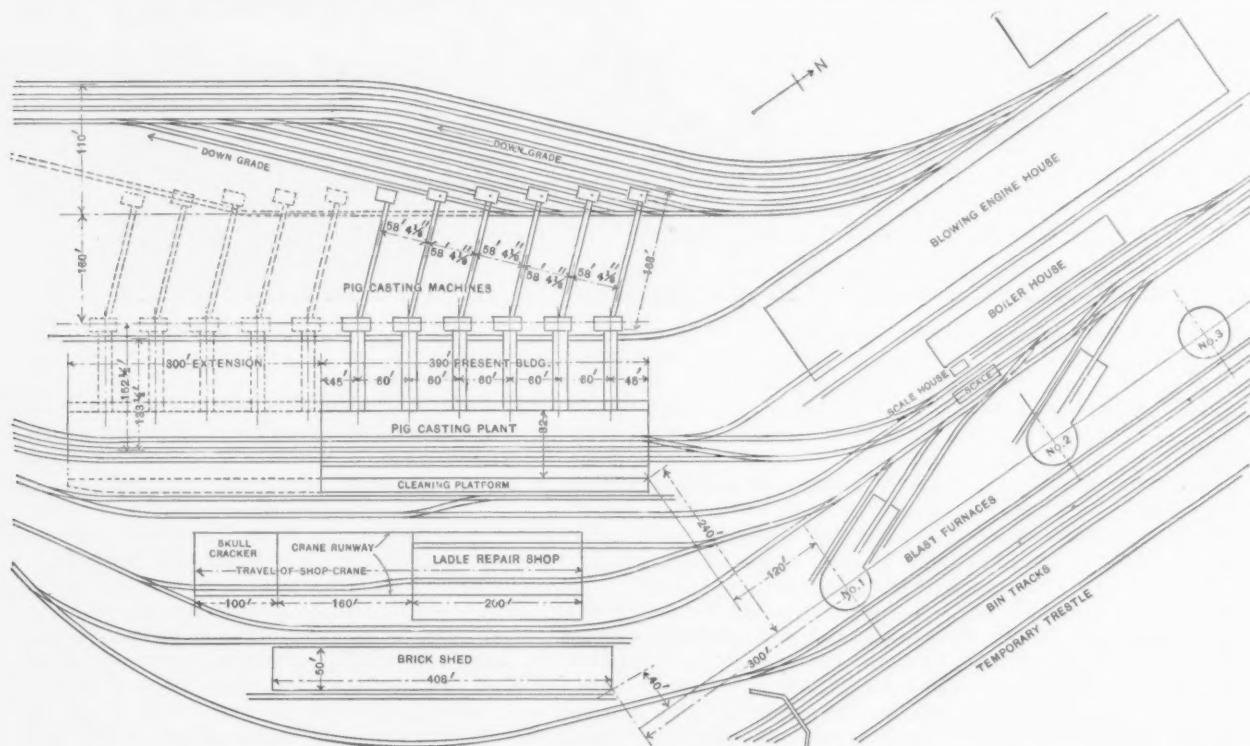


Fig. 1.—Plan Showing the General Arrangement of the Pig Casting Plant at the Indiana Steel Company, Gary, Ind.



Fig. 2.—View Looking Northeast, Showing the Loading Tracks, Cooling Conveyors and the Head Ends of the Casting Machines.

much as possible of the heat originally supplied, and the rate of production is increased and the losses as scrap decreased. To provide against shutting down the blast furnaces, it is always necessary to install some means of taking care of the surplus metal. This may be done either by casting it in pigs in sand or in a casting machine.

Usually a casting machine is located on the plot of ground least available for other purposes, because most machines so far installed have taken the place of an existing sand casting plant. In the construction of the

serve the nine furnaces which constitute the present equipment. The pig casting machines and ladle tilts were designed and built by Heyl & Patterson, Inc., Pittsburgh, Pa., who in consultation with Messrs. Thorpe and Neumann of the United States Steel Corporation are also responsible for the general layout of the casting plant.

Among the conditions that were especially required to be fulfilled were that the operations of pouring the metal from the ladles and loading the pigs into cars should be independent; that means for easy and rapid cleaning of empty ladles should be provided; that the

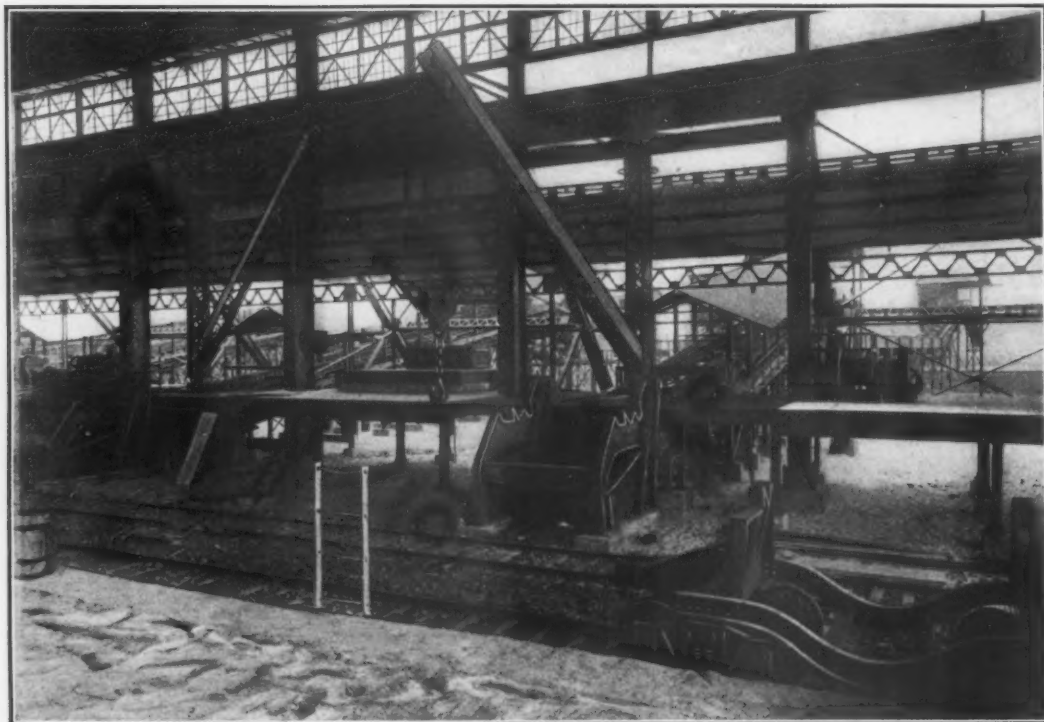


Fig. 3.—View in the Cast House, Showing a 45-Ton Ladle in the Cradle at the Left, an Empty Cradle in the Middle and a Ladle Car at the Right.

lip of the ladle should be kept close to the molds at all times, and that the pouring end should always be accessible.

In the accompanying views, Fig. 1 shows the general arrangement of the plant. The cast house is 82 ft. wide by 390 ft. long by 54 ft. from the yard level to the bottom chord of the trusses. Provision is made for a 300-ft. extension, which will accommodate five more casting machines. The cast house is equipped with two 75-ton ladle cranes of 79 ft. span, each having a 15-ton auxiliary hoist, and with a 10-ton repair crane running longitudinally of the building above the bottom chord of the roof trusses. Three ladle tracks run through the building at the yard level, and a cleaning platform 15 ft. wide is provided along the side opposite from the casting machines.

Directly in front of each casting machine is a ladle stand, consisting of two upright frames, at the upper ends of which are pivoted ladle supports or cradles. The

lower ends of the cradles rest on the stand and are connected together by a cross frame, to which attachment is made for tilting. Fig. 3 shows a 45-ton ladle in the cradle at the left, an empty cradle in the middle and a ladle car at the right. Directly back of the empty cradle is shown the pouring pot, which discharges into runners conducting the metal to both strands of each machine.

The cradles are tilted by means of the jib cranes. One is shown over the empty cradle, and the other is swung out of position to permit the ladle being lifted out of the other cradle. The method of pouring the metal may be called "lip pouring," to distinguish it from that usually employed where the ladle is tilted about its own trunnions, and begins to discharge the metal from 6 to 8 ft. above the pouring pot, finishing when the lip is practically in contact with the pouring pot. A patent has recently been granted on this pouring apparatus.

After a ladle is poured it is taken by the ladle crane to the cleaning floor, where it is cleaned and has the lip

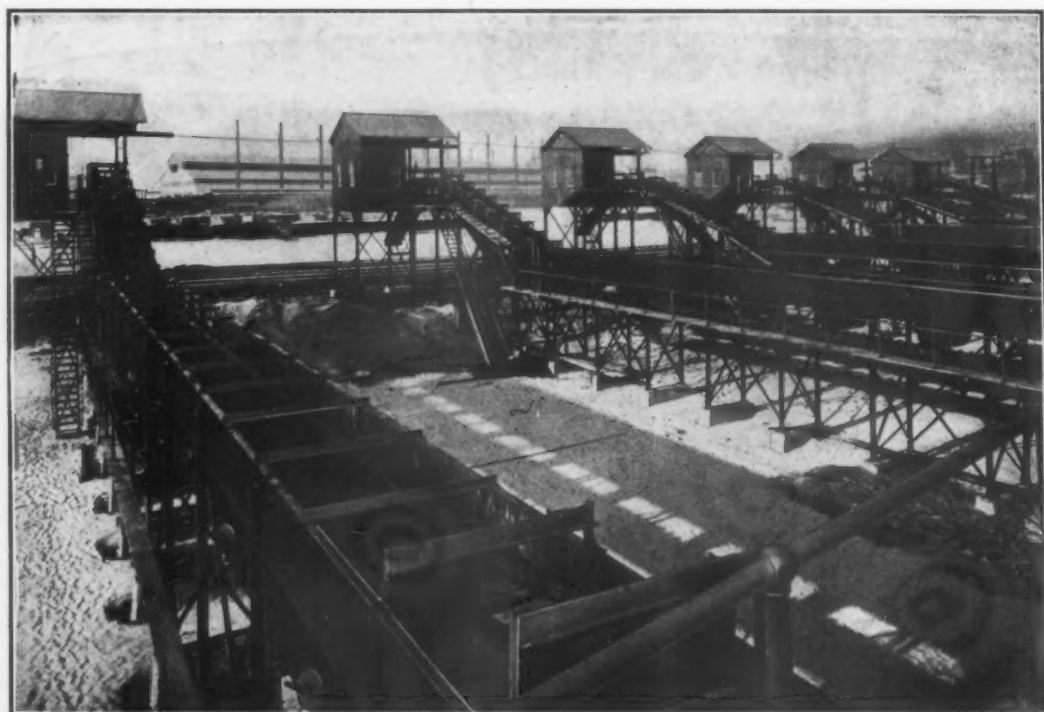


Fig. 4.—Another View of the Cooling Conveyors.



Fig. 5.—Elevation Looking South-Southwest, Showing a Section of the Cast House, Casting Machine, Cooling Conveyors and Discharging End.

relined. It is then picked up by the ladle crane and set on its own trucks.

Each casting machine is 115 ft. long. Unless the pigs are cooled they are too hot to discharge directly into cars. Each casting machine discharges on to a cooling conveyor having a tank 99 ft. long. The pigs are conveyed through this tank, submerged in water, and finally discharged into cars.

A gravity yard is provided for loading the pigs into the cars. Empty cars are stored at the upper end of the yard and are fed down by a system of ladder tracks. The arrangement is such that each machine discharges to its own track entirely independent of any other machine. Loading tracks are on a  $1\frac{1}{4}$  per cent. grade, and there is enough room to store seven loaded cars. Fig. 2 shows the loading tracks, cooling conveyors and the head ends of the casting machines. Fig. 4 is another view of the cooling conveyors, and Fig. 5 a sectional elevation of the plant through one of the six existing independent pig casting equipments.

### The Weaving of the First Fourdrinier Wire in America.

The *Paper Trade Journal* reproduces in its current issue the following article written for its twenty-fifth anniversary number, October 16, 1897, by Cornelius Van Houten, treasurer of the De Witt Wire Cloth Company, Belleville, N. J., whose recent death invests with fresh interest the facts here narrated:

"In the spring of 1847 William Staniar came from England and brought to America a model for weaving Fourdrinier wires, he being then connected with William Stephens & Son, Belleville, N. J., in which firm he had an interest. From that model I made the first American loom for weaving Fourdrinier wire, and in September, 1847, Mr. Staniar and myself wove the first American made wire, he being the 'right-hand' and I the 'left-hand' man on the loom. That first wire was 62 in. by 24 ft. 10 in., and was used in the mill of J. & R. Kingsland, at North Belleville (now Franklin), N. J.

"It was very hard work to introduce the American wires. In those days the machines were run in the main by Scotch and English tenders, and they all held the opinion that a satisfactory wire could not be made in America. There was a great prejudice against the new American wires, and the only way the American maker could sell his goods was by packing them in imported boxes. They, however, steadily won their way, and to-day American wires are superior to those made by English, German or French makers.

"In 1848 I made the first American dandy roll, but I cannot now remember what the design on it was, nor do I remember by whom it was used.

"I have been continuously connected with the business since 1847, first as journeyman, afterward as superintendent, and then as treasurer, which position I now occupy in the De Witt Wire Cloth Company, the successor of the original firm, which company was incorporated in 1876. It is one of the pleasures of my life to reflect on the early struggles, the patience and perseverance required to overcome existing prejudices, which were followed by a complete triumph over all foreign competitors, and resulted in establishing a new and important American industry."

**The Reburning of Ashes.**—Referring to the formal abandonment of the attempt to force the reburning of ashes upon the firemen of the New York city school buildings, the *Engineering News* says: "It was found that the great saving in fuel claimed for the ash burning scheme did not really exist, and the boiler repair bill was increased. The cooler ends of boiler tubes were clogged and the steaming qualities of the boilers were impaired. The boilers appear to have suffered excessive corrosion while idle, although there seems to have been no very active deterioration while they were kept hot. It is quite true that a great deal of unburned coal has gone into the ash-pit in the past; but the remedy for this waste is not in trying to burn the ashes over again with oxalic acid or any other nostrum, but in training the firing force in proper management of these boilers to prevent such waste."



## Handling Coal by Electric Shovels.

BY EDGAR H. WATLINGTON, NEW YORK.\*

Coal handling at a plant usually involves taking it from a car or barge and delivering it to a furnace. There are often intermediate operations. For instance,

storage bins before it is finally used, but its destination is always the same—the furnace.

When coal is burned it leaves a residue, the ash, and this ash has to be taken away in about the reverse of the manner that the coal is brought to the furnace. It is apparent that a distinct gain in economy is made if the same agency that carried in the coal can be made to carry out the ash.

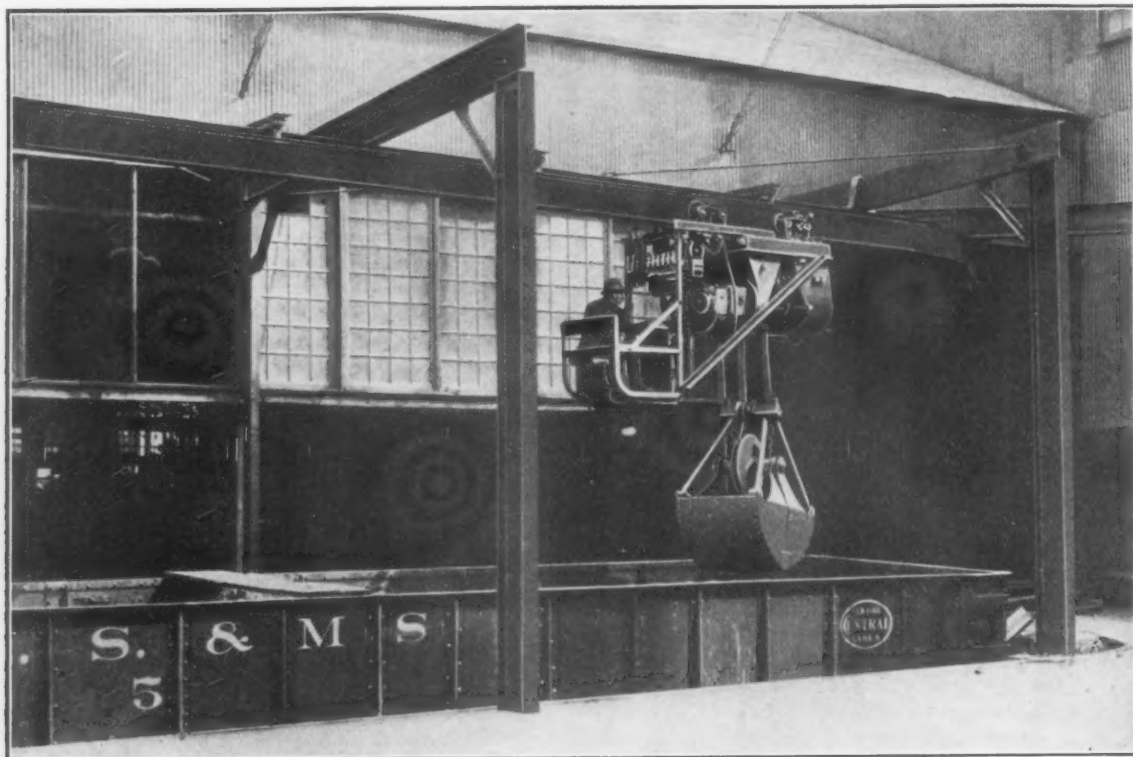


Fig. 1.—A Sprague Electric Shovel Monorail Crane.



Fig. 2.—A Sprague Electric Shovel Bridge Crane.

the car is emptied by gravity and the coal forms a pile, or a number of cars may be emptied to form a pile of greater extent. The coal may be taken from a barge and piled up for future use at a greater or less distance from the point of consumption, and it may pass through a coal crusher over a weighing scale and through one or more

There are a great many mechanical methods of handling coal in use, but only one style of apparatus is capable of taking it from a barge or car in the first place and by the use of a single unit of machinery delivering it to the furnace, making all the intermediate stops for storage, crushing, weighing, &c., and also be available for carrying out the ashes. The only machine that can do all this work is a power crane of some kind equipped

\* Sales manager of the Hoist Department of the Sprague Electric Company, New York City.

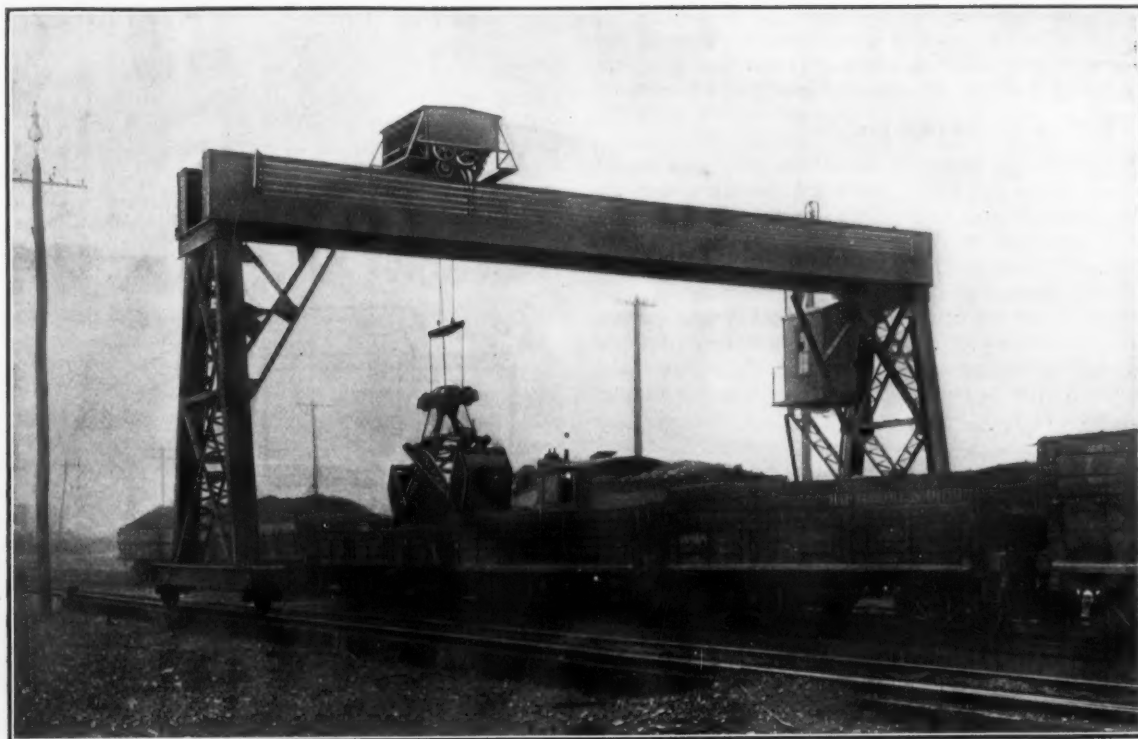


Fig. 3.—A Sprague Electric Shovel Gantry Crane.

with a grab bucket. A grab bucket power crane can shovel, lift, carry, deposit and pile, and it is the only self-contained piece of machinery that can perform all these functions.

As the use of electric motors for crane drive is so universal, and their many advantages so clearly recognized, the following considers only electric cranes. These machines for convenience may be divided into the following classes: Monorail cranes or telfers, Fig. 1; bridge cranes, Fig. 2, and gantrys, Fig. 3.

#### Monorail Cranes or Telfers

consist essentially of a carriage or carrier propelled by an electric motor along an overhead suspended track. To this carrier is attached a drum hoist driven by an independent motor or motors, the hoist ropes being attached to a grab bucket. The simplest form of bucket is the clam shell type, which consists of two bowls at-

tached to a frame work, this frame being pivoted at its upper extremity. A spool or drum is attached to the frame and around this one of the hoist ropes is wound. By pulling on the drum or closing rope the two bowls are drawn together; by slacking off, gravity draws them apart. The action of the bucket depends entirely upon the operation of the hoist, which is controlled by an operator, who is usually in a cab or cage attached to the carrier.

When the bucket is dropped, opened, on the coal or other similar material contained in a barge or car, or forming a pile, it can be closed, thus scooping up a quantity of the material, varying from a half ton to a ton or more. When closed, it can be raised by the action of the hoist as high as the altitude of the runway will permit, and the machine and load can be propelled along the runway and around curves of 10 ft. radius, more or less.

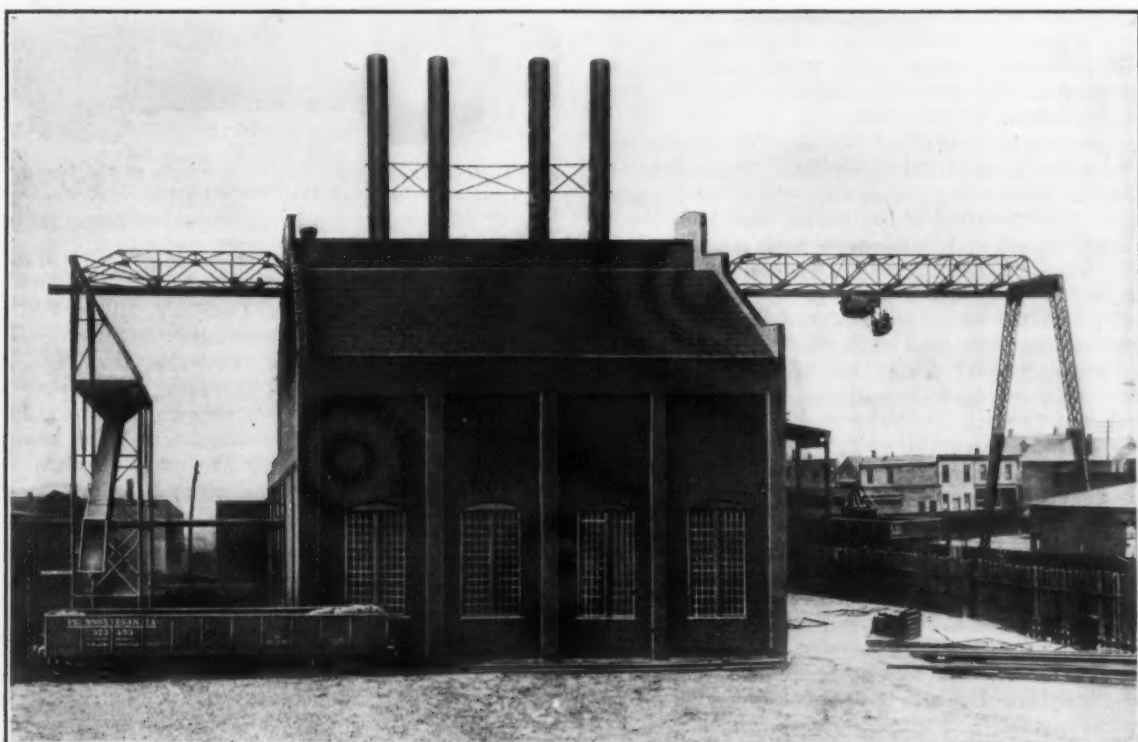


Fig. 4.—Another Sprague Electric Shovel Monorail Crane Installation.

A track scale for weighing the load can be installed at any point in the runway system. Track switches can be used and the machine switched from one track to another. Fig. 4 shows a monorail installation in use.

#### Bridge Cranes

are similar to the ordinary industrial works crane as far as the bridge and bridge drive are concerned, but the crab or combined hoist and carrier usually has two drums driven by either one or two motors, the grab bucket being attached, or "bent on" to ropes winding up on these drums. The operation of the bucket is the same as with the monorail, but the equipment cannot go around curves, and the installation of a track scale is somewhat more difficult and expensive. The advantage of a bridge crane lies in the ability to make or take from a broad pile, as may be seen in Fig. 2.

#### Gantries

are exactly similar to bridge cranes, except that the bridge is supported on two end frames or legs, so that the bridge wheels run at, or very near, the ground level. No elevated runway is required with a gantry, of which an example is given in Fig. 3.

It will be seen that these three classes of machinery have a number of points in common. They all operate a grab bucket and consequently can shovel; the hoist is carried a considerable distance above ground and so can lift and pile; they travel longitudinally and so can carry and deposit; they can carry both ashes and coal.

As before stated, no other kind of coal handling machinery can perform all of these functions. An industrial railroad can dump from an elevation and run around curves, but cannot shovel. A single chain or bucket conveyor cannot shovel or successfully run around curves. A derrick or mast and gaff rig cannot carry any distance.

The industrial railroad, the belt or bucket conveyor, the derrick, the tower and the mast and gaff, all have their distinct fields of usefulness, but when it is necessary to transport coal in moderate quantities, say from 50 to 500 tons per day, a considerable distance, in some instances not over 100 ft., and from that up to 1000 ft. or so, then the grab bucket crane shows great saving, both in first cost and cost of operation. The saving in operation is labor, power and maintenance. Labor, because one machine performs the entire cycle of operations; power, because the motors are only run while the material is being transported; maintenance, because only one style of machine has to be looked after and kept in order.

So far only general types of cranes have been considered. There is, however, one type made by the Sprague Electric Company, New York, which will be specifically described in certain respects concerning the method of control.

The grab bucket control of this make of crane is distinctive in that it is entirely electrical. Two drums are used; one to operate the closing rope, the other the holding rope. The operation of the closing rope has already been described. The holding rope holds the bucket in position, when the closing rope is slacked off to permit the bucket to open. Each drum is geared to an independent motor through a train of spur gearing. There is, however, no mechanical connection of any kind between the two sets of drums, the gears or the motors. The two ropes are made to maintain their correct position relative to each other by the proper use of resistance in the motor circuits. This resistance is correctly adjusted by the manufacturers, and once set the adjustment cannot vary.

Only one controller is used. To lower the operator simply places the handle on the lowering notch and to hoist, open or close the bucket the single controller handle is simply turned to the proper position. This is much simpler than the usual arrangement of two hand levers and two foot brakes, all of which must be operated in immediate succession by one man. The elimination of one or two clutches and two foot brakes is obviously a great advantage, and it does away with the necessity of frequently replacing a number of moving and wearing parts.

#### The New Union-Cinch Pipe Fittings.

Those who have tried to make a neat job of small piping with the ordinary threaded pipe and tapped fittings have possibly wondered why there is not some more practical way in which to accomplish the work. In the first place, it seems probable that the work of threading pipe and getting a good fit for the threads could be accomplished at a factory or in the shop much better than it is often done by means of a set of dies in the hands of more or less inexperienced workers, who are often

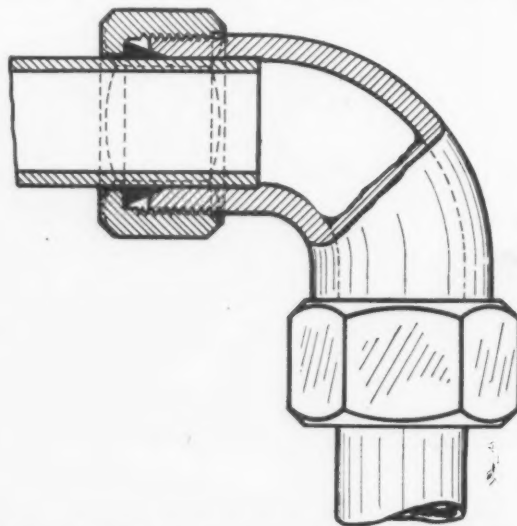


Fig. 1.—Sectional View of the Union Cinch Connection.

obliged to thread a piece by holding it with a Stillson wrench while they try to run the die on by hand; and after all the care possible has been exercised in making up a job where the pressures are rather severe, it is unusual not to find a number of leaks, and these leaks usual-

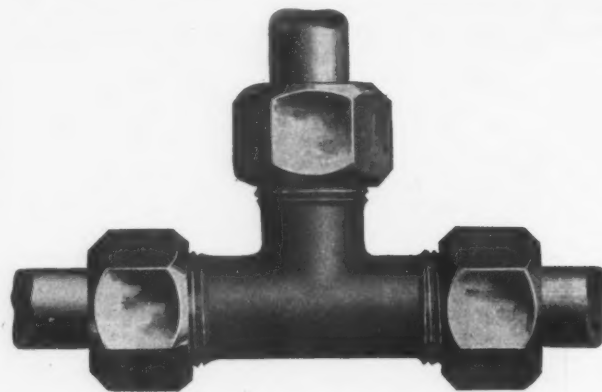


Fig. 2.—The Union-Cinch Tee, an Example of the Line of Fittings Made by the Sight Feed Oil Pump Company, Milwaukee, Wis.

ly occur where it is least convenient to get at them to give the pipe another turn to take them up.

The Sight Feed Oil Pump Company, Milwaukee, Wis., considers that it now has something that overcomes the majority of the difficulties. Believing that it is more practical to do the work of threading in the shop than it is to do it in the field this company has brought out an interesting line of pipe fittings, which are known as the Union-Cinch type. They are made in sizes corresponding to standard iron pipe up to 1 in., and are especially designed for use in connection with the oil pumps and others manufactured by this company.

It is possible to use ordinary rough pipe with these fittings, if care is exercised in filing the ends of the pipe round and smooth, but the maker of the fittings is prepared to furnish smooth drawn steel tubing corresponding to the iron pipe sizes on the outside diameter. This tubing has a wall of No. 16 gauge in the  $\frac{3}{4}$  and 1 in. sizes, and No. 18 gauge in smaller sizes, and has, therefore, a very much larger carrying capacity than ordinary pipe. In fact, the  $\frac{1}{8}$ -in. pipe will carry almost as much as the



ordinary  $\frac{1}{4}$ -in. iron pipe. This steel tubing is cheap, is thoroughly annealed, readily bent, and the expense for labor and putting up a job of pipe work using the Union-Cinch fittings is claimed to be much less than that for work done in the ordinary manner.

A hack saw and monkey wrench are all the tools that are required, except where ornamental appearance counts, in which case a bending rig of some sort is convenient. Each fitting is a union, and the piping may be taken down at any point where a fitting is inserted. The joint is made by screwing down the outside nut, which presses a thin, tapered shell into the annular cavity around the pipe, between it and the fitting, as shown in Fig. 1. Fig. 2 shows the exterior of a typical fitting. These nuts may be pulled up hard and the soft cone shell will make an absolutely tight joint around the tubing, which, it is claimed, is capable of withstanding 1000 lb. pressure per square inch; or, in fact, is absolutely tight under any pressure that the tubing will stand.

Where it is desirable for the sake of display, brass pipe may be used, although in cases where nickel plating is done the steel tubing will nickel plate as well as brass pipe and is much cheaper.

This type of joint may be taken down and made up

seats itself in the hole in the bar. This positions the head accurately on the bar and clamps it rigidly at the same time. The bar as well as the locating pin and the bushing which guides it are hardened, ground and lapped.

Fig. 2 shows the instrument with the anvil head removed, and the bar and micrometer head in position over the base anvil with a 2-in. disk between the measuring surfaces. From 0 to 7 in. can be measured in this manner. The distance from the bottom of the base to the anvil is 1 in. With the head positioned to the second hole of the bar 0 to 1 in. can be measured. The bar is drawn to its seat in the base by the same screw used in connection with the anvil head.

Fig. 3 shows the instrument with the bar given a half turn in the base and the head positioned to the seventh hole in the bar measuring a 6-in. high block. In this position any distance from 0 to 8 in. can be measured. Cast iron high blocks, as illustrated, 6 and 12 in. high, can be furnished. With these the instrument has a measuring range of 26 in. by thousandths of inches. They are useful in setting the tables of milling and boring machines to an exact position in relation to the centers of their spindles, and also in measuring the various heights of planed and milled work, the heights of jig bushings, &c.

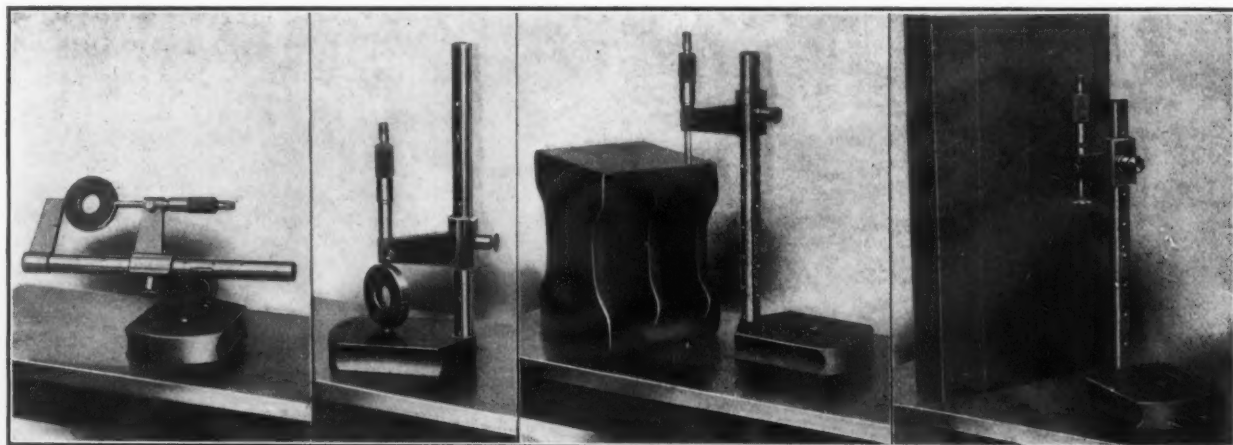


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

The New Universal Micrometer and Surface Gauge Made by the Schellenbach & Hunt Tool Company, Cincinnati, Ohio.

again any number of times without any trouble. It seems to be especially suitable for the work of piping up oil pumps, gravity oiling devices, gauges, drop pipes, &c., and especially in such work around ammonia handling machinery, where this steel tubing and fittings (made of steel) are especially valuable because of the readiness with which they may be made up perfectly tight against the escape of ammonia gas. The fittings include ells, tees, couplings, adapters (for connecting to threaded systems) and relief valves in all sizes from  $\frac{1}{8}$  to 1 in.

### The Universal Micrometer and Surface Gauge.

A handy shop tool has been devised by the Schellenbach-Hunt Tool Company, Cincinnati, Ohio, known as the Universal Micrometer and Surface Gauge. The accompanying engraving shows the instrument in various positions. In Fig. 1 the device is used as a bench instrument, with the bar of the micrometer held in the base clamp; any measurement from 0 to 7 in. can be taken. The bar can be shifted endwise to any desired position in the base clamp and by a quarter turn backward the instrument can be lifted out of the clamp and placed in position to permit the sliding head to be moved to the desired unit on the bar as indicated by the figures. The instrument used in the hand will measure round work to 4 in. diameter and flat work to 7 in. by thousandths of inches. The bar is flattened on one side as shown, and the inch positions are marked by conical holes in the center of this flat. To set the measuring head to the required position on the bar, it is only necessary to slide the head to an approximate position as indicated by the figures and screw the locating pin down until its end

Fig. 4 shows the instrument used, as a scribing gauge with a circular scriber attached to the end of the measuring spindle. This disk is notched on its periphery, as shown. The lower face of the disk is ground at right angles to its bore and the upper side at a slight angle and to a sharp edge, the points formed between the notches being the scribing elements. The lower side of the disk is drilled and tapped for a screw, the end of which projects over the wall of the bore and locates the scribing line in the plane of the end of the measuring spindle. The disk is slotted and clamped to the spindle by a binding screw. The face of the disk being flat subsequent grinding to keep the scribing points sharp will not affect the accuracy. Taken in connection with the high blocks lines may be drawn on work from within 1-16 in. of the base surface to the full range of the instrument by thousandths of inches. It is of course to be understood that the measuring spindle should be locked before the scribing is done.

The London *Times Engineering Supplement*, referring to the return to England of Colonel Hughes, who represented the Sheffield high speed steel manufacturers in the recent hearing in the United States of the action recently brought against them by the Bethlehem Steel Company, says: "Should the Bethlehem Company succeed, the effect would be serious on the Sheffield makers of high speed steels, who export considerable quantities to the United States. An important combination of high speed steel makers was formed in America just before Colonel Hughes came away, so that now practically all high speed steel makers in this country who have already been associated in defending the action will be joined by a similar combination in the United States."

### A Mammoth German Rotary Planer.

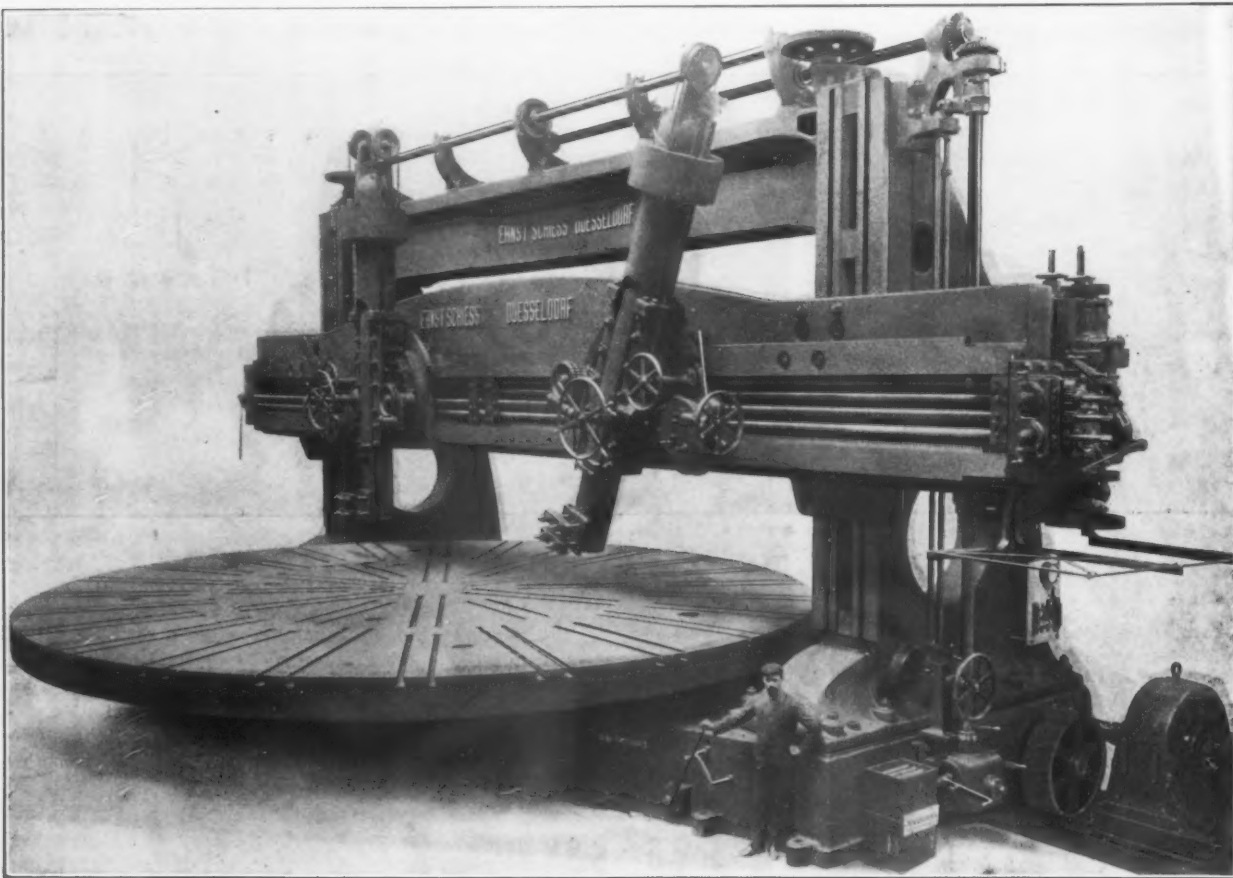
An electrically driven rotary planer, constructed by Ernst Schiess Actien Gesellschaft, Düsseldorf, Germany, is herewith illustrated, as one of nine built for the Krupp Company, to be used principally upon armor plate and similar work.

The table has a diameter of 35 ft. 9 in. (11 m.), but work 39 ft. (12 m.) wide and 11 ft. (3.4 m.) high can be handled. The table is driven by a series-wound motor, which through differential gears allows of five different working speeds, ranging from one revolution in 51 sec. to one in 4 min. The table is supported in the middle by a spindle or shaft set in a hydraulic bearing; it is also supported underneath. In a table of its size extraordinary measures had to be taken to take care of the bending moments, and in this case heavy plates were placed in slots on the plate above and around the circumference of the plate below.

The operation of such a giant machine made it necessary to deviate from common practice in many respects.

### For the Abolition of the Numbered Metal Gauges.

As is well known, efforts have been put forth from time to time over a long period of years to rid the iron manufacturing and iron working trades of the confusion in designations of the thickness of metals. Some headway has been made, but the situation has been left far from clear, from the fact that efforts have been directed in many cases toward the adoption of a new or compromise standard of gauges or to the abandonment of some of the existing standards rather than toward securing uniformity in designation. The latest movement aims at the abolition of the gauge numbers and the use of decimal designations entirely, but without attempt to eliminate any of the commonly used sizes or gauges. The Association of American Steel Manufacturers, which is carrying on this campaign, has prepared a circular on the subject, which it is now sending out to manufacturers, presenting the argument for the decimal descriptions. The secretary of the associa-



A 35-Ft. Motor Driven Rotary Planer Built for the Krupp Works by the Ernst Schiess Actien Gesellschaft, Düsseldorf, Germany.

For instance, all operations of stopping and starting the feeds, the regulation of the driving motor for the table, as well as the changing of speeds, are controlled from a platform, shown at the right in the engraving without its flooring. This effectually does away with all climbing about of the operators in charge. Besides this, the cutting tools are provided with every device for their easy, safe and automatic movement. If they are cutting more than they will stand they will automatically raise themselves and take a shallower cut. The tool heads may be operated by hand as well as automatically.

The compensating weights of the tool heads are independent and self-contained. This arrangement, while not absolutely new, it is believed has nevertheless not before been employed on a rotary planer. In most German planers the weights are carried on the ends of wire ropes and the holder is balanced between them. The weight of the machine assembled is 660,000 lb., 330 tons, but even this does not convey the idea of its enormous size; that may be had from the engraving by comparison with the size of the operator.

Jesse J. Shuman, inspecting engineer of the Jones & Laughlin Steel Company, Pittsburgh, has sent with the circular a blank form to about 700 manufacturers. This form calls for answers to two questions, first, whether the recipient agrees that the remedy proposed is the best, and, second, whether he will enforce the decimal designations in his own business. Of several hundred replies received thus far nearly all are favorable. The association's views on the subject are set forth in the circular as follows:

This circular is sent to you as a manufacturer or user of any kind of material the size or thickness of which is commonly described by a gauge number. You are doubtless aware of the confusion that exists by reason of the divers systems of gauges, and we can assume with confidence that you agree that it would be a good thing if the numbered gauges could be abolished forever.

#### Failure of Previous Efforts.

The misunderstandings—sometimes expensive, always annoying—that have been caused by the existing confu-



sion in gauges, have been the subject of much discussion among technical bodies during the last 30 years, and very considerable progress has been made along the road to a remedy. Unfortunately, however, the movement toward a common standard has been more or less impeded by two things:

1. The adoption by Congress in 1893 of the United States Standard system, which may have been forced on the nation with good intentions on the part of our lawmakers, but which has certainly failed to meet their expectations in point of universal use, and has become instead the most serious element of confusion.

2. Misdirected efforts on the part of mechanical and technical societies and others. In this connection we might include the adoption of decimal slot gauges or gauge plates, which it was hoped would do away with gauge numbers by substituting decimals nearly equivalent. This movement has been only a halfway remedy and in the 12 years since it was started it has steadily lost nearly all the ground it gained, chiefly, it would seem, because the tools have a limited number of slots, so that they do not take care of the exact decimals which the trade is used to and has a right to keep.

#### The Better Way.

The Association of American Steel Manufacturers has been in close touch with this subject for the last 15 years. This body is firmly convinced that the only way out of the tangle is to make no effort to change any of the existing standard directions of materials, but to insist that sizes and thicknesses be expressed in decimal parts of an inch instead of indicated by number.

This change is so easy to make and is such a thorough and complete cure for the ills of arbitrary gauge numbers that it is hard to see what valid objection could be raised against its adoption. It is just as easy to say 0.025-in. sheets as to say No. 24 sheets, and then there is no danger that the thickness will be misunderstood to mean 0.020 in., 0.022 in. or any of the other numerous equivalents for No. 24.

In 1904 the Westinghouse Electric & Mfg. Company officially abandoned the use of all wire and sheet metal gauges in exactly the manner we now propose, freeing itself from the confusion of the 10 or more different systems which had governed the materials used in its shops. We are informed that the change was made with ease and that at once its effects began to show in simplified details in all departments.

#### What Is Proposed.

If you agree that it would be good to have an end of the numbered gauges, we respectfully suggest that you do your share by making an official rule in terms somewhat as follows:

1. Effective this date, all sheets, wire rods, tubing, hoops, &c., are to be designated by decimal thickness instead of by gauge number. For instance:

No. 5 rods W & M. gauge will be described as 0.207-in. rods;

1-in. x No. 10 B. W. G. hoops will be described as 1-in. x 0.134-in. hoops;

No. 20 U. S. Std. sheets will be described as 0.0375-in. sheets, &c.

2. Requisitions for material, drawings, correspondence, invoices and all other business of the company will discontinue the use of the numbered gauges in referring to the thickness of materials.

3. (If a manufacturer of the products in question). Orders received from customers, in which dimensions are described by number, will be translated into decimal equivalents before they are given out for execution. In acknowledging such orders mention will be made of this change, with the request for the customers' co-operation in future business.

4. No sizes or thicknesses of standard materials are to be changed. The same sizes or gauges at present in use will remain unchanged, the only change being that they will be designated by decimal dimension instead of by number.

5. In caliper materials micrometers or other gauges reading to thousandths of an inch will be used.

6. The extreme refinements shown by the fifth or sixth decimal places will be dropped, and not more than three significant figures will be used. By significant figures is meant all figures to the right of ciphers after the decimal point. Thus, No. 21 U. S. Standard will be known as 0.0344-in. instead of 0.034375-in.; No. 8 U. S. Standard will be shortened from 0.171875-in. to 0.172-in.

7. This change does not affect finished articles of any kind, such as screws, nails, rivets or any manufactured article known to the trade by size number.

#### The Work of the Association of American Steel Manufacturers.

In considering this appeal you are to understand that the Association of American Steel Manufacturers is doing this work from disinterested motives, each of its members being perfectly able to take care of itself in matters touching its own interests. A movement of this kind can be best furthered through a technical body, however, and the individual firms can in this way act as a unit.

It may be of interest to state further that this association is composed of the leading steel and iron manufacturers in the United States and that its work is and always has been purely technical. Among its achievements are the standardizing of structural sections; the promulgation of the well-known manufacturers' standard specifications for structural, bridge, boiler, rivet and other grades of steel, which to-day govern the manufacture of, perhaps, more than half of the tonnage of these materials and on which have been based most of the specifications written subsequently; also other services valuable to both manufacturer and customer in the removal of trade restrictions unfair to one or the other.

In making this effort to bring about this further large benefit the association is asking of you nothing difficult nor expensive. If the firms to which this booklet is sent will each make this simple change there is no doubt that the long battle against numbered gauges will be won.

#### A Table for Comparison.

A table is given herewith for your convenience in translating gauge numbers of the more prominent systems into equivalent decimals, shortened to the three significant places when necessary.

WIRE AND SHEET METAL GAUGES IN APPROXIMATE DECIMALS OF AN INCH.

Gauge numbers.	United States.	American or Brown & Sharpe.	Washburn & Moen, American Steel & Wire Co. Reobling.	Trenton Iron Co.	Birmingham or Stubbs' Iron Wire.	Stubbs' Steel Wire.	British Imperial.	Gauge numbers.
7-0	0.500	....	....	....	....	....	0.500	7-0
6-0	0.469	....	0.460	....	....	....	0.464	6-0
5-0	0.438	....	0.430	0.450	....	....	0.432	5-0
4-0	0.406	0.460	0.394	0.400	0.454	....	0.400	4-0
000	0.375	0.410	0.363	0.360	0.425	....	0.372	000
00	0.344	0.365	0.331	0.330	0.380	....	0.348	00
0	0.313	0.325	0.307	0.305	0.340	....	0.324	0
1	0.281	0.289	0.283	0.285	0.300	0.227	0.300	1
2	0.266	0.258	0.263	0.265	0.284	0.219	0.276	2
3	0.250	0.229	0.244	0.245	0.259	0.212	0.252	3
4	0.234	0.204	0.225	0.225	0.238	0.207	0.232	4
5	0.219	0.182	0.207	0.205	0.220	0.204	0.212	5
6	0.203	0.162	0.192	0.190	0.203	0.201	0.192	6
7	0.188	0.144	0.177	0.175	0.180	0.199	0.176	7
8	0.172	0.128	0.162	0.160	0.165	0.197	0.160	8
9	0.156	0.114	0.148	0.145	0.148	0.194	0.144	9
10	0.141	0.102	0.135	0.130	0.134	0.191	0.128	10
11	0.125	0.0907	0.121	0.118	0.120	0.188	0.116	11
12	0.109	0.0808	0.106	0.105	0.109	0.185	0.104	12
13	0.0938	0.072	0.0915	0.0925	0.095	0.182	0.092	13
14	0.0781	0.0641	0.080	0.0806	0.083	0.180	0.080	14
15	0.0703	0.0571	0.072	0.070	0.072	0.178	0.072	15
16	0.0625	0.0508	0.0625	0.061	0.065	0.175	0.064	16
17	0.0563	0.0453	0.054	0.0525	0.058	0.172	0.056	17
18	0.050	0.0403	0.0475	0.045	0.049	0.168	0.048	18
19	0.0438	0.0359	0.041	0.040	0.042	0.164	0.040	19
20	0.0375	0.032	0.0348	0.035	0.035	0.161	0.036	20
21	0.0344	0.0285	0.0318	0.031	0.032	0.157	0.032	21
22	0.0313	0.0253	0.0286	0.028	0.028	0.155	0.028	22
23	0.0281	0.0226	0.0258	0.025	0.025	0.153	0.024	23
24	0.025	0.0201	0.023	0.0225	0.022	0.151	0.022	24
25	0.0219	0.0179	0.0204	0.02	0.020	0.148	0.020	25
26	0.0188	0.0159	0.0181	0.018	0.018	0.146	0.018	26
27	0.0172	0.0142	0.0173	0.017	0.016	0.143	0.0164	27
28	0.0156	0.0126	0.0162	0.016	0.014	0.139	0.0149	28
29	0.0141	0.0113	0.015	0.015	0.013	0.134	0.0136	29
30	0.0125	0.010	0.014	0.014	0.012	0.127	0.0124	30
31	0.0109	0.0089	0.0132	0.013	0.010	0.120	0.0116	31
32	0.0102	0.008	0.0128	0.012	0.009	0.115	0.0108	32
33	0.0094	0.0071	0.0118	0.011	0.008	0.112	0.010	33
34	0.0086	0.0063	0.0104	0.010	0.007	0.110	0.0092	34
35	0.0078	0.0056	0.0095	0.0095	0.005	0.108	0.0084	35
36	0.007	0.005	0.009	0.009	0.004	0.106	0.0076	36
37	0.0066	0.0045	0.0085	0.0085	....	0.103	0.0068	37
38	0.0063	0.004	0.008	0.008	....	0.101	0.006	38
39	....	0.0035	0.0075	0.0075	....	0.099	0.0052	39
40	....	0.0031	0.007	0.007	....	0.097	0.0048	40



## Fluctuations in the Prices of Iron and Steel Products, 1899-1908.

(With Supplement.)

The Supplement accompanying this issue is the annual chart in which plotted lines are used to indicate the course of prices for pig iron, Bessemer steel billets and the leading forms of finished iron and steel in the 10 years ending with 1908. The diagrams are based on monthly averages of prices given week by week in the market reports of *The Iron Age* from the leading selling centers. The figures on the margin of the chart are for dollars and the black, red and blue lines represent gross tons. The market prices of finished material per pound have been multiplied by 2240, so that the plotted lines would show the exact relation between like quantities of all products.

The table below gives the monthly average prices—that is, the average of the weekly market quotations for each month. These are for Bessemer pig iron at Pittsburgh, Southern No. 2 foundry iron at Cincinnati, local No. 2 foundry iron at Chicago, basic iron at Philadelphia (from 1904 on), Bessemer steel billets at Pittsburgh, tank plates, refined bar iron and beams at Philadelphia, and cut nails and wire nails at Pittsburgh. The chart represents one more product, steel rails, but that price can be readily obtained from its generally unvarying line. The prices below for pig iron and billets are in dollars per gross ton; those for finished materials are in cents per pound:

Average Monthly Prices, 1899-1908.

Months.	Bessemer pig, Pittsburgh.	Steel billets, Pittsburgh.	So. No. 2 foundry, Cincinnati.	Local No. 2 foundry, Chicago.	Cut nails, Pittsburgh.	Tank plate, Philadelphia.	Beams, Phila- delphia.	Ref'd bar iron, Philadelphia.	Wire nails, Pittsburgh.
<b>1899</b>									
Jan. ....	10.87	16.62	10.31	11.12	1.18	1.35	1.40	1.15	1.42
Feb. ....	11.60	18.00	11.69	12.12	1.32	1.55	1.42	1.20	1.57
Mar. ....	14.59	24.30	13.75	14.60	1.48	1.89	1.55	1.41	1.94
Apr. ....	15.03	25.37	14.50	15.12	1.67	2.18	1.64	1.50	2.05
May ....	16.20	26.75	14.56	15.37	1.65	2.23	1.63	1.56	2.10
June ....	18.51	30.10	16.00	17.60	1.97	2.48	1.82	1.81	2.30
July ....	20.65	33.12	17.56	18.87	2.12	2.58	2.08	2.00	2.42
Aug. ....	21.75	35.40	18.35	20.30	2.20	2.72	2.20	2.00	2.50
Sept. ....	23.43	38.37	19.94	21.87	2.45	2.92	2.40	2.05	2.76
Oct. ....	24.18	38.75	20.75	23.00	2.50	3.00	2.40	2.13	2.87
Nov. ....	24.78	36.50	20.75	23.10	2.48	2.87	2.40	2.21	2.95
Dec. ....	24.90	33.75	20.75	23.50	2.45	2.48	2.40	2.20	2.95
<b>1900</b>									
Jan. ....	24.90	34.50	20.69	23.50	2.50	2.38	2.40	2.20	3.20
Feb. ....	24.80	34.87	20.50	23.50	2.50	2.32	2.40	2.20	3.20
Mar. ....	24.72	33.00	20.30	23.50	2.50	2.10	2.40	2.18	3.20
Apr. ....	24.70	32.00	20.19	23.37	2.50	2.02	2.40	2.12	2.95
May ....	21.00	28.90	19.75	22.30	2.05	1.75	2.40	1.77	2.20
June ....	19.72	27.25	18.75	20.37	2.05	1.60	2.22	1.56	2.20
July ....	16.75	21.00	16.81	18.25	1.97	1.37	2.05	1.33	2.20
Aug. ....	15.60	18.20	14.25	15.90	1.95	1.30	1.89	1.28	2.20
Sept. ....	13.87	16.93	13.62	15.00	1.95	1.25	1.65	1.30	2.20
Oct. ....	13.06	16.50	12.87	14.50	1.95	1.21	1.65	1.28	2.20
Nov. ....	13.48	18.95	12.95	14.50	1.95	1.44	1.65	1.28	2.20
Dec. ....	13.43	19.75	13.75	14.75	1.95	1.54	1.65	1.42	2.20
<b>1901</b>									
Jan. ....	13.15	19.75	13.45	14.75	1.95	1.55	1.65	1.44	2.22
Feb. ....	14.43	20.31	13.12	14.25	2.05	1.55	1.63	1.35	2.30
Mar. ....	16.31	22.88	14.00	15.25	2.01	1.62	1.68	1.35	2.30
Apr. ....	16.75	24.00	14.50	15.50	2.00	1.76	1.75	1.47	2.30
May ....	16.30	24.00	13.85	15.50	2.00	1.78	1.75	1.51	2.30
June ....	16.00	24.38	13.37	15.00	2.00	1.75	1.75	1.55	2.30
July ....	16.00	24.00	13.00	15.00	2.00	1.75	1.75	1.55	2.30
Aug. ....	15.75	24.20	13.00	15.00	2.00	1.75	1.75	1.56	2.30
Sept. ....	15.75	24.88	13.06	15.00	2.05	1.75	1.75	1.61	2.30
Oct. ....	15.89	26.70	13.75	14.75	2.04	1.75	1.75	1.62	2.28
Nov. ....	16.00	27.00	14.00	14.88	2.05	1.75	1.75	1.64	2.17
Dec. ....	16.31	27.50	14.25	15.50	2.05	1.75	1.75	1.65	1.99
<b>1902</b>									
Jan. ....	16.70	27.50	14.55	15.90	2.05	1.78	1.75	1.68	1.99
Feb. ....	16.93	29.37	14.75	16.50	1.95	1.78	1.75	1.68	2.05
Mar. ....	17.37	31.25	14.75	18.16	1.95	1.78	1.85	1.84	2.05
Apr. ....	18.75	31.50	16.87	18.62	1.96	1.81	1.90	1.92	2.05
May ....	20.75	32.20	18.35	20.50	2.05	1.95	1.99	1.96	2.05
June ....	21.56	32.37	20.19	21.50	2.05	2.00	2.11	1.99	2.05
July ....	21.60	31.75	20.75	21.25	2.05	2.00	2.27	1.95	2.05
Aug. ....	21.62	31.06	23.06	21.75	2.05	2.00	2.21	1.93	2.05
Sept. ....	21.75	29.50	25.00	23.00	2.05	2.00	2.10	1.92	2.03
Oct. ....	21.75	29.70	25.65	23.00	2.05	2.06	2.09	1.93	1.89
Nov. ....	21.68	28.50	23.62	23.00	2.05	2.10	2.00	1.87	1.85
Dec. ....	21.75	29.12	22.44	23.00	2.05	2.10	1.97	1.92	1.85

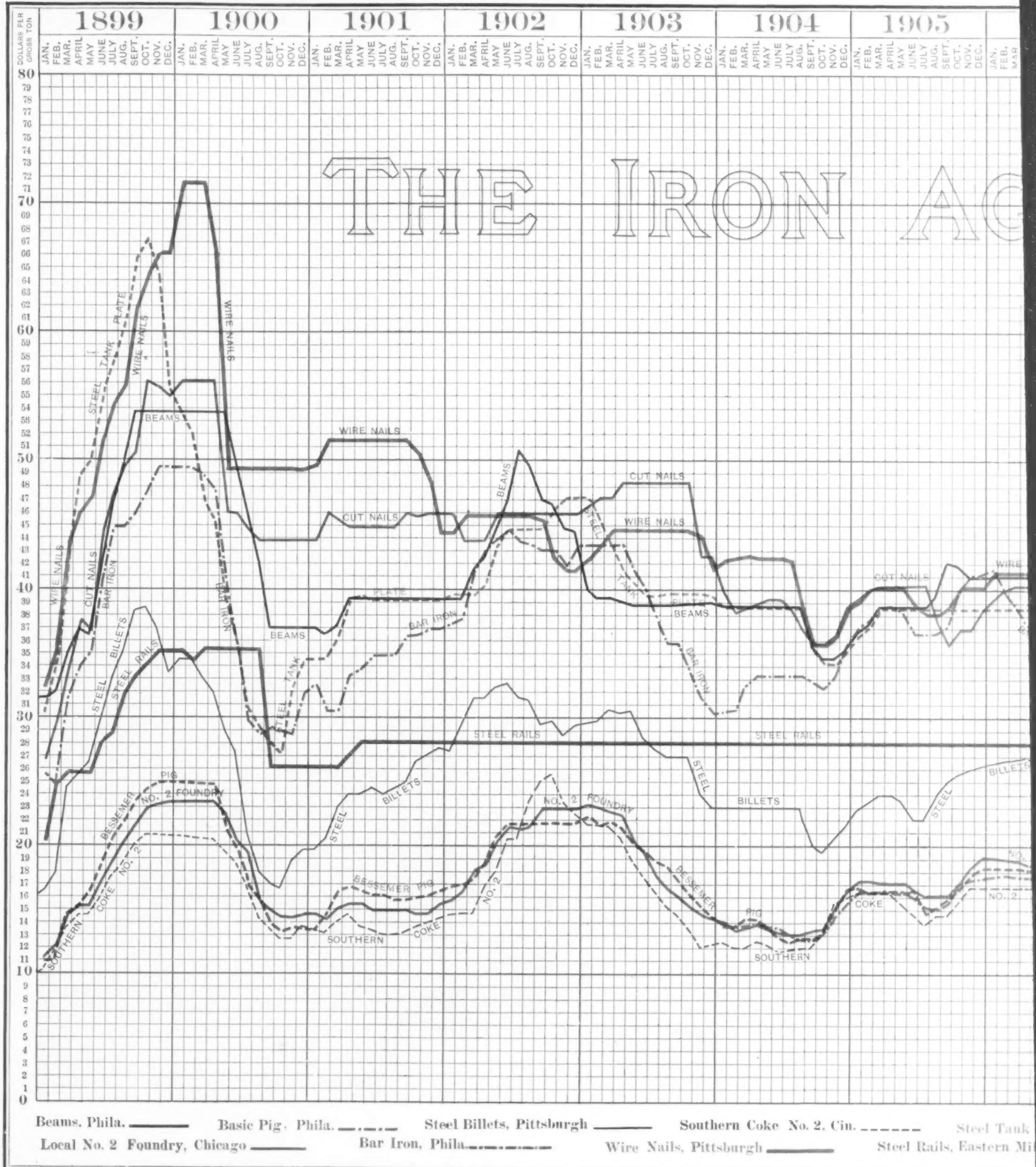
Months.	Bessemer pig, Pittsburgh.	Steel billets, Pittsburgh.	Basic pig, Philadelphia.	So. No. 2 foundry, Cincinnati.	Local No. 2 foundry, Chicago.	Cut nails, Pittsburgh.	Tank plate, Philadelphia.	Beams, Phila- delphia.	Ref'd bar iron, Philadelphia.	Wire nails, Pittsburgh.
<b>1903</b>										
Jan. ....	22.15	29.60	....	21.65	23.10	2.07	2.10	1.78	1.93	1.89
Feb. ....	21.45	29.87	....	21.50	23.00	2.10	2.05	1.75	1.93	1.92
Mar. ....	21.85	30.62	....	21.37	22.87	2.10	1.94	1.75	1.94	2.00
Apr. ....	21.28	30.25	....	20.15	22.52	2.15	1.85	1.74	1.93	2.00
May ....	20.01	30.37	....	18.87	20.37	2.15	1.80	1.73	1.86	2.00
June ....	19.72	28.87	....	17.75	19.50	2.15	1.78	1.73	1.79	2.00
July ....	18.89	27.60	....	16.15	17.90	2.15	1.77	1.73	1.69	2.00
Aug. ....	18.35	27.00	....	15.19	16.87	2.15	1.78	1.73	1.60	2.00
Sept. ....	17.22	27.00	....	14.75	16.06	2.15	1.78	1.73	1.60	2.00
Oct. ....	16.05	27.00	....	13.50	15.35	2.15	1.78	1.73	1.50	2.00
Nov. ....	15.18	24.00	....	12.00	14.75	1.90	1.78	1.73	1.40	1.97
Dec. ....	14.40	23.00	....	12.05	14.46	1.90	1.77	1.73	1.35	1.87

Months.	Bessemer pig, Pittsburgh.	Steel billets, Pittsburgh.	Basic pig, Philadelphia.	So. No. 2 foundry, Cincinnati.	Local No. 2 foundry, Chicago.	Cut nails, Pittsburgh.	Tank plate, Philadelphia.	Beams, Phila- delphia.	Ref'd bar iron, Philadelphia.	Wire nails, Pittsburgh.
<b>1904</b>										
Jan. ....	13.91	23.00	13.90	12.37	14.12	1.77	1.73	1.73	1.35	1.89
Feb. ....	13.66	23.00	13.73	12.12	13.56	1.70	1.73	1.73	1.36	1.90
Mar. ....	14.25	23.00	13.78	12.10	13.70	1.72	1.73	1.73	1.45	1.91
Apr. ....	14.18	23.00	14.00	12.50	14.00	1.74	1.73	1.73	1.48	1.90
May ....	13.60	23.00	13.81	12.25	13.50	1.75	1.73	1.73	1.48	1.90
June ....	12.81	23.00	13.53	11.80	13.35	1.75	1.73	1.73	1.48	1.90
July ....	12.40	23.00	13.04	11.81	13.25	1.72	1.73	1.73	1.48	1.89
Aug. ....	12.81	23.00	12.81	12.00	13.25	1.65	1.73	1.73	1.48	1.71
Sept. ....	12.63	20.00	12.73	12.00	13.50	1.60	1.57	1.57	1.45	1.60
Oct. ....	13.10	19.50	13.21	12.81	13.75	1.60	1.53	1.53	1.43	1.60
Nov. ....	14.85	20.25	14.56	15.19	15.63	1.62	1.53	1.53	1.47	1.62
Dec. ....	16.65	21.20	15.75	15.85	16.60	1.73	1.57	1.57	1.60	1.73

Months.	Bessemer pig, Pittsburgh.	Steel billets, Pittsburgh.	Basic pig, Philadelphia.	So. No. 2 foundry, Cincinnati.	Local No. 2 foundry, Chicago.	Cut nails, Pittsburgh.	Tank plate, Philadelphia.	Beams, Phila- delphia.	Ref'd bar iron, Philadelphia.	Wire nails, Pittsburgh.
<b>1905</b>										
Jan. ....	16.85	22.75	16.50	16.25	17.50	1.75	1.63	1.63	1.65	1.75
Feb. ....	16.41	23.50	16.50	16.25	17.50	1.79	1.66	1.66	1.68	1.80
Mar. ....	16.35	24.00	16.69	16.25	17.45	1.80	1.73	1.73	1.73	1.80
Apr. ....	16.35	24.00	16.75	16.25	17.25	1.80	1.73	1.73	1.73	1.80
May ....	16.16	23.50	16.56	15.81	17.25	1.80	1.73	1.73	1.71	1.80
June ....	16.65	22.00	16.00	14.65	16.65	1.80	1.73	1.73	1.63	1.74
July ....	14.85	22.00	15.33	13.94	16.12	1.80	1.73	1.73	1.63	1.70
Aug. ....	15.20	24.00	15.15	14.40	16.25	1.66	1.73	1.76	1.63	1.70
Sept. ....	15.91	25.00	15.81	14.37	16.25	1.60	1.73	1.88	1.66	1.74
Oct. ....	16.54	25.62	17.19	15.31	17.31	1.65	1.73	1.87	1.78	1.80
Nov. ....	17.85	26.00	17.55	16.60	18.80	1.65	1.73	1.83	1.83	1.80
Dec. ....	18.35	26.00	17.81	16.75	19.25	1.71	1.73	1.83	1.83	1.80

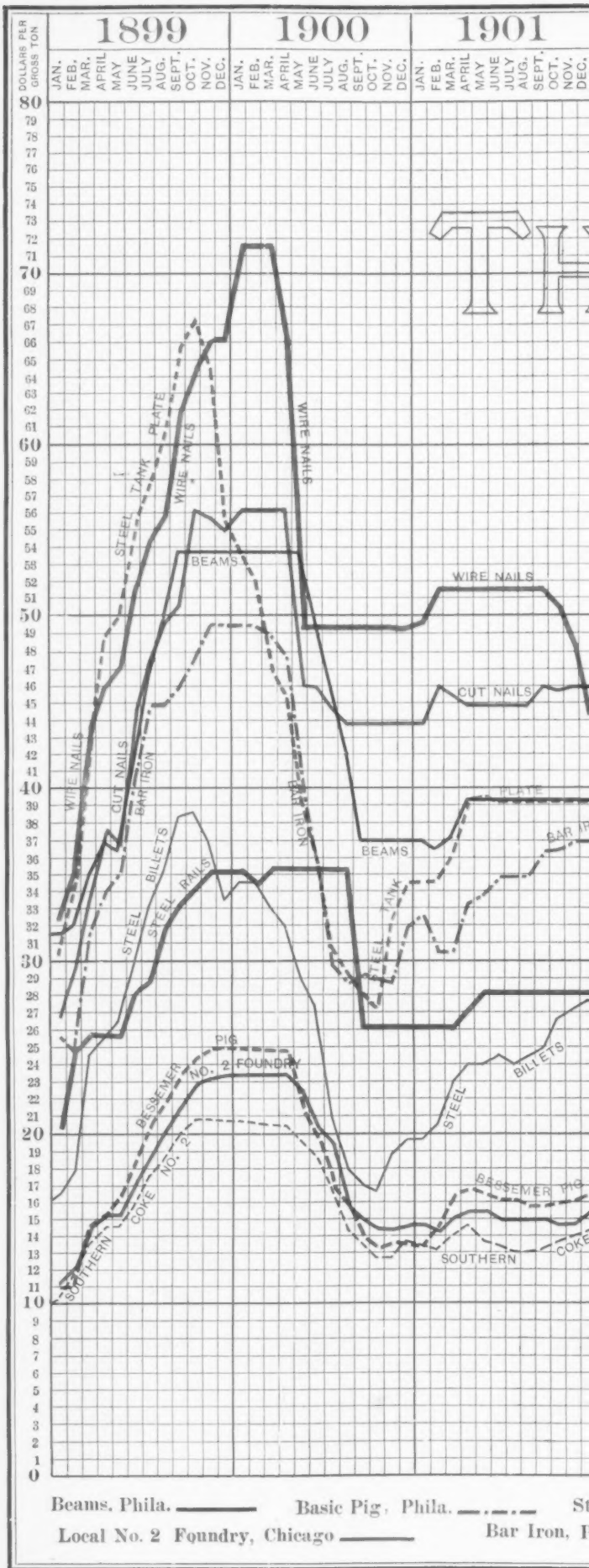
Months.	Bessemer pig, Pittsburgh.	Steel billets, Pittsburgh.	Basic pig, Philadelphia.	So. No. 2 foundry, Cincinnati.	Local No. 2 foundry, Chicago.	Cut nails, Pittsburgh.	Tank plate, Philadelphia.	Beams, Phila- delphia.	Ref'd bar iron, Philadelphia.	Wire nails, Pittsburgh.
<b>1906</b>										
Jan. ....	18.35	26.25	17.89	16.75	19.25	1.75	1.73	1.83	1.86	1.85
Feb. ....	18.35	26.50	17.98	16.75	19.06	1.79	1.73	1.83	1.78	1.85
Mar. ....	18.28	26.70	17.81	16.65	19.00	1.80	1.73	1.83	1.73	1.85
Apr. ....	18.19	27.00	17.86	16.63	18.75	1.80	1.73	1.83	1.66	1.85
May ....	18.10	26.40	17.59	16.75	18.55	1.80	1.73	1.83	1.63	1.85
June ....	18.23	26.63	17.58	16.44	18.10	1.75	1.73	1.83	1.63	1.85
July ....	18.41	27.25	17.58	16.06	18.25	1.75	1.73	1.83	1.63	1.84
Aug. ....	19.00	27.80	18.02	17.30	19.10	1.75	1.73	1.83	1.67	1.82
Sept. ....	19.54	28.00	18.56	18.69	19.81	1.80	1.73	1.83	1.76	1.86
Oct. ....	20.35	28.00	19.56	20.00	21.13	1.90	1.73	1.83	1.83	1.85
Nov. ....	22.85	28.88	21.15	23.38	24.35	1.93	1.73	1.83	1.83	1.88
Dec. ....	23.75	29.50	22.75	25.00	25.50	2.05	1.99	1.83	1.83	2.00

Months.	Bessemer pig, Pittsburgh.	Steel billets, Pittsburgh.	Basic pig, Philadelphia.	So. No. 2 foundry, Cincinnati.	Local No. 2 foundry, Chicago.	Cut nails, Pittsburgh.	Tank plate, Philadelphia.	Beams, Phila- delphia.	Ref'd bar iron, Philadelphia.	Wire nails, Pittsburgh.
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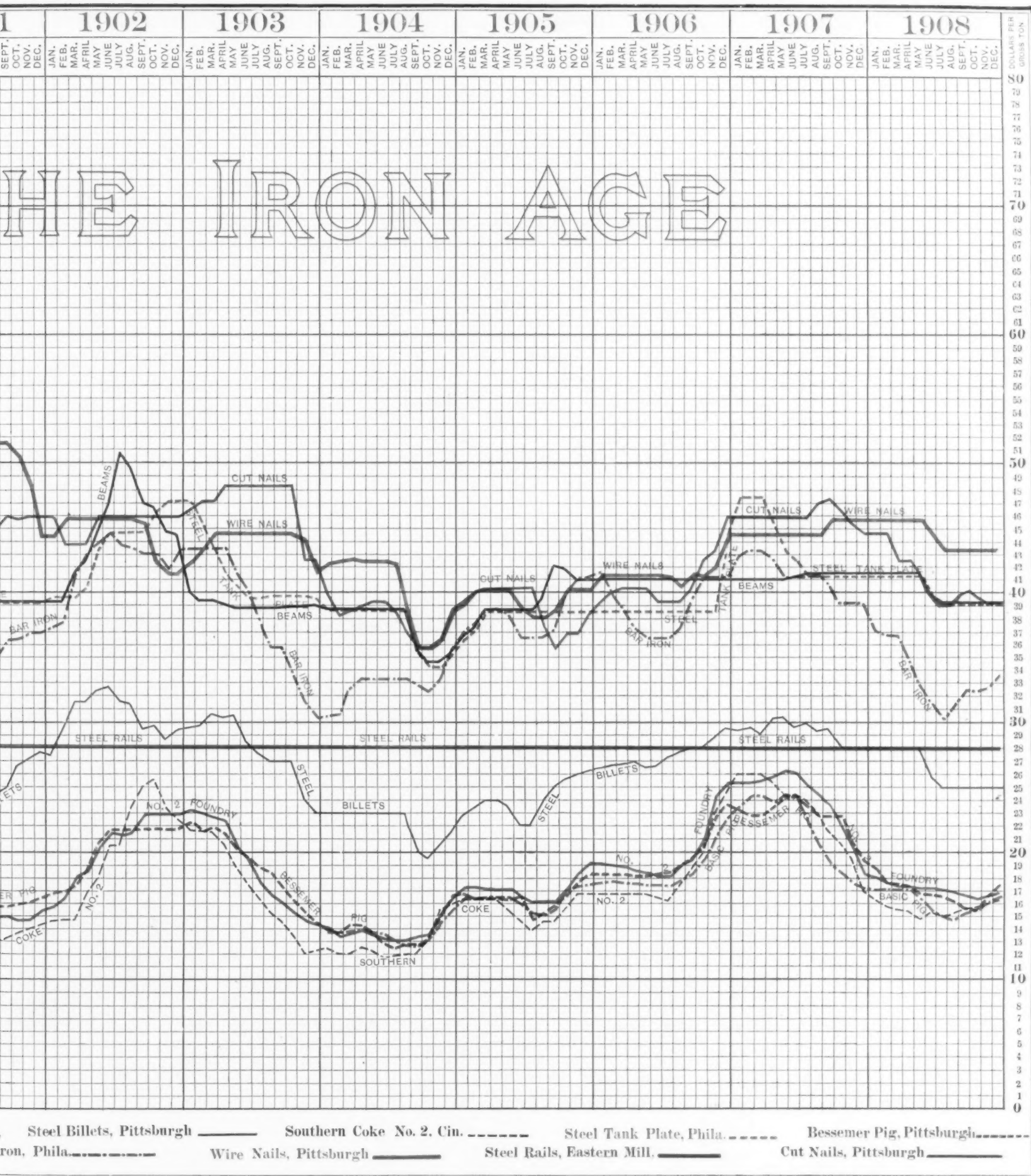
Fluctuations in the Prices of Crude and Finished  
from January 1, 1899, to January 1, 1909—G



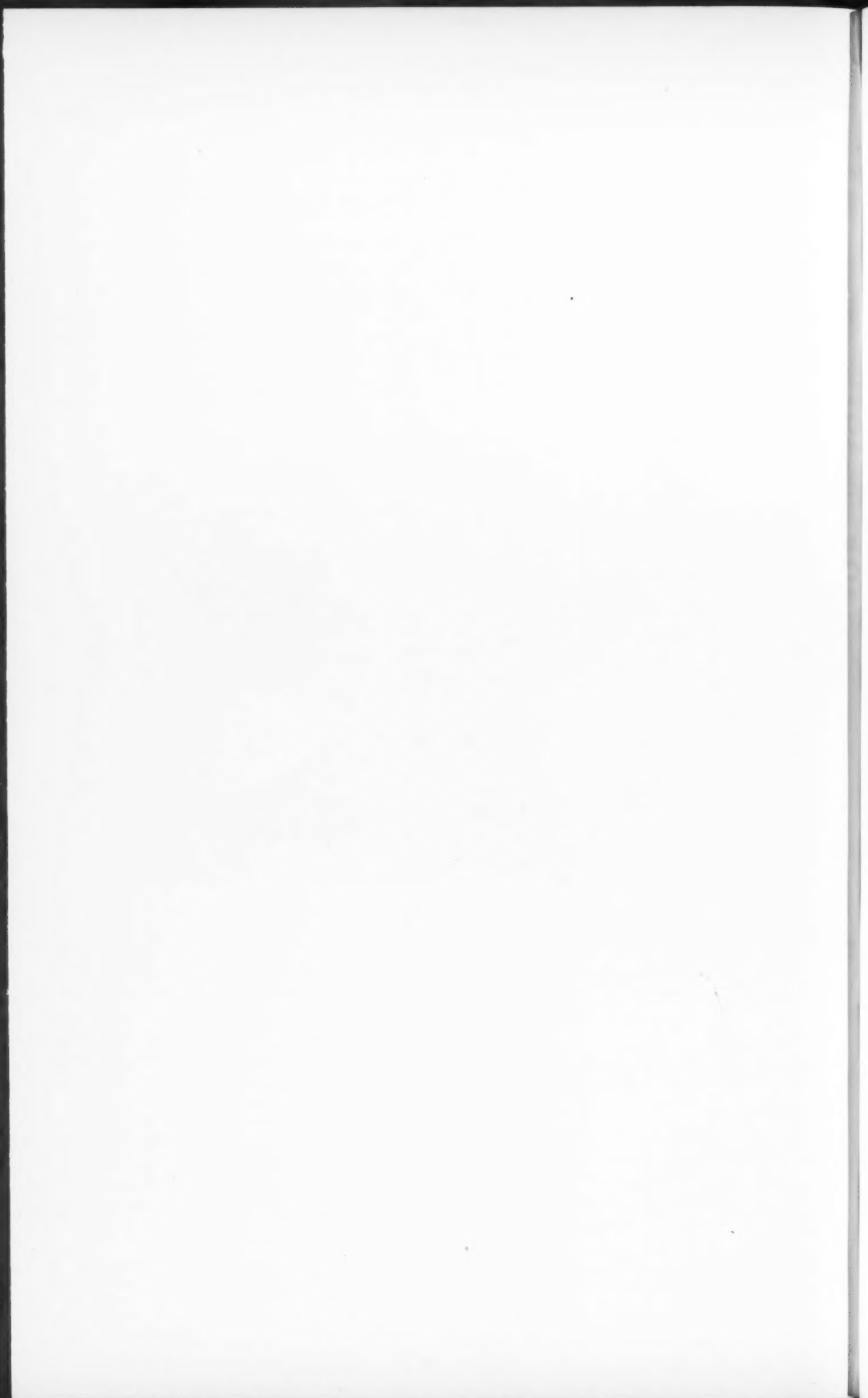


Fluctuations in the  
from January





the Prices of Crude and Finished Iron and Steel  
 January 1, 1899, to January 1, 1909—Gross Tons.



**Gardner's No. 12 Duplex Disk Grinder.**

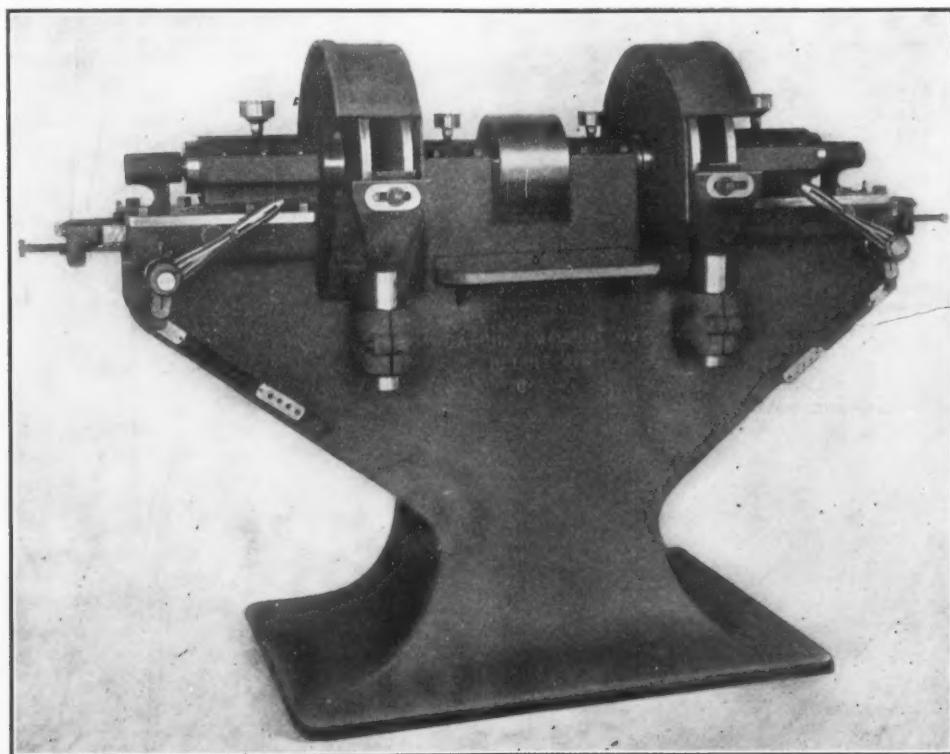
A grinding machine similar to the one described in *The Iron Age* July 2, 1908, but having two pairs of opposing disks instead of one is now built by the Gardner Machine Company, Beloit, Wis. Like the other it is designed for rapidly grinding small pieces having parallel faces to be finished, such as bolt heads, square or hexagon nuts, wrenches, thrust collars, die blanks, reamer blades, thread die chasers and typewriter, sewing machine, fire-arm parts, &c. Two men may use the machine at the same time or one operator may do rough grinding with one pair of wheels and finishing work with the other set.

The principal feature of the No. 12 machine is the one belt drive. The outer disk wheels are mounted on hollow spindles supported in the sliding heads. Shafts coupled to the main spindle drive the hollow spindles carrying the outer disk wheels. The driving shafts are splined to engage keys fastened in the hollow spindles, and are pro-

15 or 18 in. diameter may be used. The maximum distance between each pair of wheels is  $4\frac{1}{2}$  in., which in most cases is ample. This space may be increased to suit special cases. The weight of the machine as illustrated is 1900 lb. With all accessories, including a setting-up press for the wheels, a countershaft, supplies, &c., the weight is 2500 lb.

**The Molding Machine in Stove Foundries.**

A conference of representatives of the Stove Founders' National Defense Association and the International Iron Molders' Union was held at Chicago, December 15 to 18, 1908. It was agreed to change the time for the annual conferences between the two organizations from March to December. The question of wages was discussed, and it was decided that the present rate should remain in effect until January, 1910. Naturally the conditions under which molding machines shall be employed



The No. 12 Duplex Improved Disk Grinder Built by the Gardner Machine Company, Beloit, Wis.

vided with dustproof collars to exclude dust from the hollow spindles.

To remove the disk wheels from the machine it is only necessary to uncouple the driving shaft of the sliding head from the main spindle of the machine. The ends of the driving shafts are made with right and left hand threads and taper seats, and the main spindle of the machine is bored and threaded to fit them. The sliding heads may be removed and a special work table or fixtures used in connection with a single wheel. The disk wheels are fastened to the spindles by the usual countersunk screws.

The sliding heads are operated by hand levers, which are directly connected to steel cut pinions operating in steel cut racks fastened to the under side of the sliding heads. The sliding heads are equipped with micrometer stop screws and back stops. In double disk grinding the back stop is important, especially where thin work of from  $\frac{1}{8}$  to 1-32 in. thick is being ground. By means of this back stop the backward travel of the sliding head is confined to the least amount required to admit the piece to be ground between the wheels, and thus removes the liability of the work being caught between the wheels and the work rest.

The machine throughout is rigidly constructed, and lubrication and the exclusion of dust from all wearing surfaces carefully provided for. Disk wheels of either

in union stove foundries was an important question before the conference, particularly in view of the report of the committee of the S. F. N. D. A. on its investigations last year as presented at the Hotel Astor meeting, New York, in November, 1908. This report was printed in *The Iron Age* of November 26, page 1514. The Chicago conference reached an agreement on the use of molding machines, subject to ratification by a special meeting of the Stove Founders' National Defense Association to be held at the Hotel Astor, New York, Thursday, January 21.

Joseph T. Ryerson & Sons, Chicago, have favored us with a magnificent photograph, handsomely framed, of their general offices and great iron and steel warehouses in Chicago. The extent of the business handled by this firm could hardly be indicated in a more striking manner than by this photograph, showing the huge aggregation of buildings necessary to house the enormous stock of iron and steel required.

The American Steel & Wire Company started one of its two blast furnaces at Donora, Pa., on December 26, and on January 4 6 of the 12 open hearth furnaces at the Donora Works were started. These two blast furnaces and 12 open hearth furnaces had been idle for about a year.



## Novel Industrial Railroad Installation

At the Cambridgeport Plant of the Boston Woven Hose & Rubber Company.

BY JOHN M. BRUCE, NEW YORK.

The efficient and economical handling and transporting of material in quantity, however large, is not difficult so long as the material is of constant size and quantity. It is simply a matter of good engineering to be able to estimate and compare costs and efficiency of the various systems under given conditions. When the material to be handled varies widely in character and amount the problem becomes exceedingly difficult to solve successfully. The largest factors in its solution are experience to draw upon and ability to meet the given conditions by originating methods and equipment to fit those conditions.

An excellent example of success in meeting both of these problems is found in the industrial railway installation of the Boston Woven Hose & Rubber Company.

The installation naturally divides itself into two parts, the first being one needed in every industrial plant—means for handling coal and ashes. Prior to the present installation, all of the coal used in the plant had been handled from bin to boiler in wheelbarrows, and the ashes taken out and dumped by team. The present coal handling equipment consists of four standard 1-ton boiler charging cars mounted on Hyatt roller bearings. These bearings overcome friction to such an extent that one man can easily handle a loaded car.

Fig. 1 shows the car just after the coal had been weighed and with the side dropped ready for charging the boilers, and indicates how such an installation increases the efficiency of the engine room force, not alone by transporting coal in much greater bulk than in wheelbarrows, but also in decreasing the labor required to charge the boiler from such a car instead of a barrow. The ashes are handled in the V body dump cars, shown in Fig. 2. To complete this part of the installation 220 ft. of track and a turntable were required.

The ashes are used in grading the plant yard, and part of the track, installed primarily for handling raw

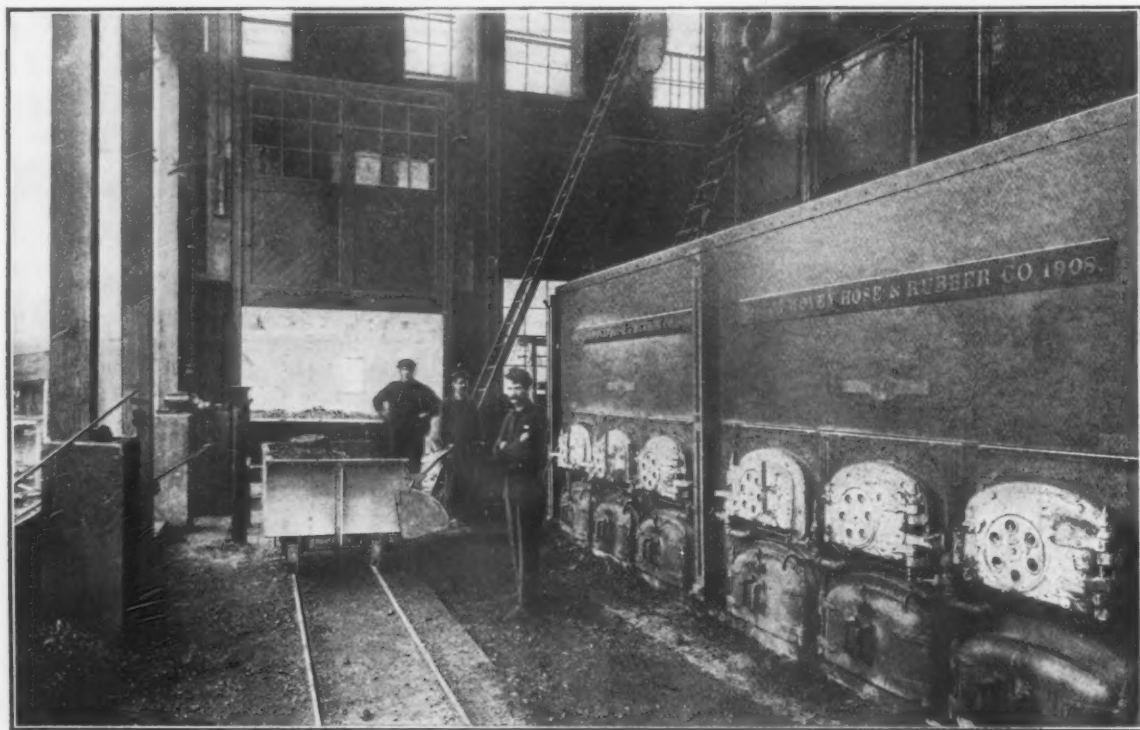


Fig. 1.—The Coal Handling Equipment in the Boiler Room.

The Cambridgeport plant of the company, like most large industrial works, is the gradual outgrowth of small beginnings. Because of this no general and efficient layout has been possible; as department after department has outgrown its original quarters new buildings have been erected, where there was space for them instead of where they properly belonged.

The conditions of transportation and intercommunication between departments have thus grown increasingly difficult. Up to a year ago all the raw material coming in and going through the plant and the finished product leaving it was handled from department to department and building to building on ordinary hand trucks and by teams. The raw materials handled are of a wide assortment. Among the principal items may be mentioned bales of sheeting, weighing approximately 350 lb.; bundles of wire, weighing approximately 100 lb.; barrels of zinc, litharge and pyrites, weighing 400 or 500 lb.; bales of scrap rubber, weighing from 400 to 600 lb., and shoddy, delivered in 100-lb. bales. To expedite the passage of material through the plant and to decrease the cost of handling, the company commissioned the Wonham-Major Engineering Works, 29 Broadway, New York, to design and install an industrial railway equipment that would meet the peculiar conditions of the business in question.

and finished materials about the plant, is utilized in disposing of the ashes. Its cost is charged to the other part of the equipment. Approximately 45 tons of coal and ashes are handled per day.

The new installation has saved the company \$120 a month, \$60 being the wages of one coal passer, whose services were dispensed with, and the other \$60 the monthly contract price for the team that formerly carted the ashes. The total cost of this installation was \$950, and, saving as it does \$1440 per annum, the investment returns to the company a profit of, approximately, 150 per cent..

The conditions to be met in designing the equipment for handling the raw material and finished product in and out of the plant were far more complicated, not only on account of the widely varying nature of the materials used, but because manufacturing conditions made it inexpedient to install any permanent industrial railway fixtures on the floors of the buildings themselves. The company manufactures a widely varying assortment of rubber goods, running from automobile mats to high pressure hose, and insisted that the floors of its buildings must be left absolutely free of any permanent encumbrance that would tend to impede changes in the layout of machinery as the demand on their various departments increased or decreased. For this reason no tracking was laid inside of any buildings, except the shoddy room.



Fig. 2.—The Dumping Ash Cars.

In place of the ordinary industrial car, a flat four-wheel truck was designed. These trucks are mounted on a double width wheel, as shown in Fig. 3. The wide inner flanges of the wheels enable the truck to run nearly as easily on the concrete floors of the buildings as on the tracks in the yard. The front axle of the trucks is mounted on a fifth wheel and is fitted with a tongue.

Under the former system of handling the material was moved inside of the buildings on hand trucks and loaded on a wagon for transportation from one building to another; there unloaded and moved to the required point again by hand truck. Under the present system all of this intermediate handling is eliminated. If, for example, wire is required in the hose room, a laborer runs a truck over the yard track and into the storage

economical to handle these altogether on the car wheel hand trucks, for the reason that lifting them from the ground onto the flat cars is the work of three men, whereas, one man can easily handle a bale to any part of the plant by the use of the hand truck.

As the material used in the plant is so varied and its quantities so constantly changing, it has been found almost impossible to keep an accurate comparative record of the cost of the new method of handling as compared with the old, but the elimination of the team and driver from the storage yard and the labor actually saved outside of the various buildings has amounted to a total saving of a little less than \$4000 in the first year. The total cost of the equipment, including about 700 ft. of track and the necessary turntables, was, approximately, \$2200. The actual saving so far secured, therefore, represents a profit of 180 per cent. on the cost of the installation.

The grade of the yard was so uneven, however, that the track is very rough, and with a heavily loaded car two and sometimes three men are required in their handling. When the grading, now going on, is completed and the ash fill has had a chance to settle, the track will be regraded at slight expense and the efficiency of the plant will be materially increased.

J. H. O'Brien, the company's superintendent, in speaking of the installation, said: "While we are thoroughly

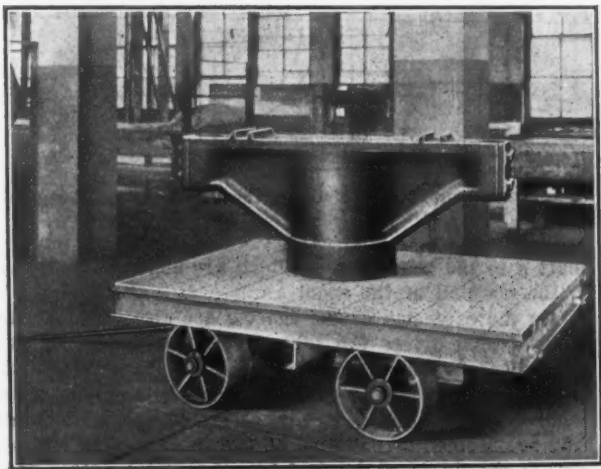


Fig. 3.—The Combination Truck Car for Transporting Miscellaneous Materials.

building and then across the concrete floor to the point where the wire is stored, returning in the same manner and delivering his load alongside of the machine where it is to be used.

All of the buildings are equipped with elevators so that the trucks can be run from floor to floor with no more trouble than on one level. The equipment consists of 20 flat trucks and 50 two-wheel hand trucks mounted on smaller, though similar wheels, as shown in Fig. 4. The use of these hand trucks has been found highly efficient for the reason that less than a flat truck load of material is often required in various places, and this can be brought rapidly by one man on the hand truck running from building to building on the tracks. Moreover, in the case of the rubber scrap bales, weighing, as before stated, from 400 to 600 lb., it has been found more



Fig. 4.—A Hand Truck Arranged to Run on the Industrial Track System.

satisfied with the saving we have made from the investment in industrial railway equipment, which, in fact, has paid for itself in the first seven months of its installation, the increased efficiency of the whole plant, the saving of our workmen's time and the increased rapidity with which material goes through the plant are infinitely more important to us than the actual money saved, which we can directly credit to the new installation."

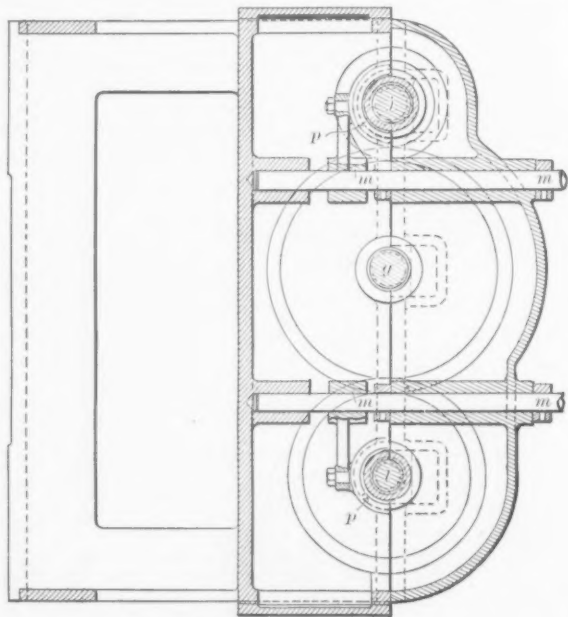
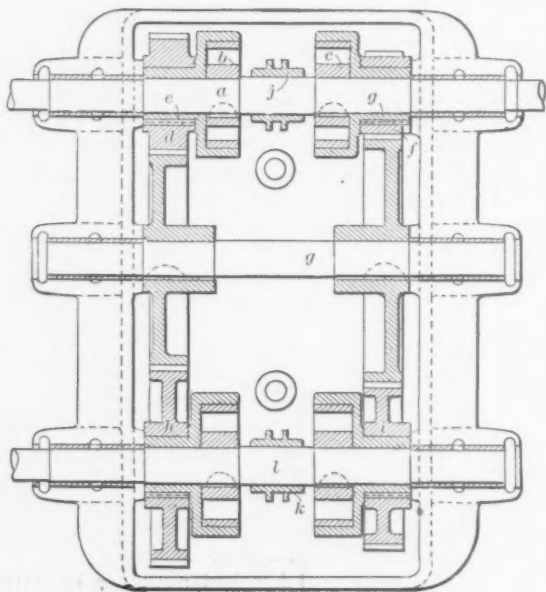
The repair part of one of the presses, weighing 2 tons, and which is loaded on the car shown in Fig. 3, is typical of the widely varying uses to which these cars are put. This casting was unloaded from the freight car directly on the hand car, was run across the yard and delivered alongside of the press, to which it formed a part, by one man. While, of course, the flat wheel truck is not so easy to push on the floor as when running on the track, there are many plants in which a combination system such as this would be found more economical and efficient than the ordinary all track installation.

The elimination of the interior track, leaving the plant far more open for new layouts of machinery, &c., as occasion arises, and the fact that the material can be delivered exactly where it is required without any added

### The Prentice Variable Speed Planer Countershaft.

The variable geared speed planer countershaft shown in the line drawing was designed by the Prentice Bros. Company, Worcester, Mass., in converting the group of planers installed in the company's shop to the requirements of modern practice. The machines ran at a slow single speed. The four-speed countershaft affords speeds of 25, 35, 45 and 56 ft. per minute, with a constant return speed of 75 ft.

The mechanism is essentially similar to that used for speed changes in the company's geared head engine lathe. Power is delivered from the main line to a pulley on the extension of shaft *a*, on which are keyed the friction rings *b* and *c*. The gear *d* is keyed to the friction cup *e*; gear *f* is keyed to friction cup *g*, the cups revolving loosely on the shafts. Similarly the gears *h* and *i* on the shaft *l* are keyed to friction cups, running loose, while the friction rings are keyed to the shaft. Thus four changes of speed are given to shaft *l*, the two engagements accomplished by the spool *j* transmitting the power respectively through the intermediate gears on the



Longitudinal and Lateral Sections of the New Speed Changing Countershaft for Planers Made by the Prentice Bros. Company, Worcester, Mass.

handling, will often more than compensate for the additional labor of hauling the trucks upon floors instead of track.

**An Indianapolis Briquetting Machine.**—George W. Ladley, Fletcher Hines and W. M. Gentle of the Indianapolis Pressed Fuel Company, Indianapolis, Ind., have perfected a machine for the manufacture of briquettes. One of the machines is in operation at the company's plant, at State avenue and Deloss street. The purpose of the machines is to save coal dust and waste coal at the mines by making briquettes. The waste coal is ground almost to dust and is run automatically into a mixing machine. The mixture is conveyed by a worm into the pressing machine. The latter is 16 ft. high, made wholly of iron and steel, and weighs 62,000 lb. Numerous cups or molds are on a revolving device inside the frame. The heated mixture is fed into these molds; the briquettes are submitted to 30,000 lb. pressure and are then ejected from the machine and run on a belt to bins. It is claimed to be possible to make per minute over 1000 briquettes weighing 10 ounces each.

The Old Sterling iron mine, known as Bulkley No. 1, located at Antwerp, N. Y., and owned by the Old Sterling Iron & Mining Company, William P. Woodcock, general manager, and controlled largely by New York parties, was started January 4 after being closed for more than a year. The ore will be shipped to Hamilton, Ontario.

shaft *g* to the gears *h* or *i*, which are engaged according to the position of the spool *j*.

On the extension of the shaft *a* are also mounted the pulley which drives the table on its return stroke and the pulleys for raising and lowering the cross rail, while on the extension of the shaft *l* is keyed the pulley, delivering the four cutting speeds, as stated. Faster speeds may be obtained by speeding up the shaft *a*. The shipper rods *m* extend from the feed box to a point within easy reach of the operator. A turning motion of these rods, through rocker arms keyed to them, produces a sliding motion of the two spools. The forks engaging the spools are shown at *p*. The bottom of the gear box is made oil tight and the gears constantly run in a bath of oil.

Referring to the experience thus far with the 25-watt tungsten lamp, the *Electrical World* says that it is a handy size and certain to be popular, but it will not stand rough treatment. The commonest fault is blackening. Barring this, the average working life seems to be lengthening and the ordinary claim of 800 to 1000 hr. is being borne out. "The most striking thing in the present stage of tungsten lamp exploitation is the number of arc lamps that are being replaced all over the country. The common 4 or 5 ampere inclosed arc is a marvel of inefficiency, and three or four 100-watt tungsten lamps will generally replace it with excellent results. Hence there is a procession of arc lamps headed for the scrap heap."



# TARIFF TESTIMONY AT WASHINGTON.

## Statements Regarding Metals Submitted to the Ways and Means Committee.

The Ways and Means Committee has received some additional briefs and less formal written statements regarding the rates of the metal schedule, some of the most important of which are presented herewith.

### IRON ORE AND IRON AND STEEL.

#### Statement of John W. Gates, of Port Arthur, Texas, and New York City.

I notice a great deal of evidence is being taken on tariff matters in Washington.

It seems to me there are three articles that ought to be put on the free list—iron ore, coal and lumber.

I have a large portion of my fortune in the steel business, but I say this to you conscientiously and candidly. A cut of 50 per cent. in the schedule would not hurt the manufacturers of iron and steel a particle.

### CUTLERY.

#### Statement of Alfred Field & Co., New York City.

We beg to submit herewith a few salient facts in reference to cutlery, covered by paragraph 153, which we hope may not be amiss in helping your committee arrive at a fair and proper rate of duty on these goods.

We have read the statement submitted to your committee by the American manufacturers of cutlery, covering paragraph 153. They state their total sales for 1906 were \$3,000,000. It is our opinion this is a very low estimate, but your committee will see that the foreign value of articles imported under this paragraph in the fiscal year 1907 is only \$174,835, or, say, 5 7/8 per cent. of the American product, according to their statement, and we may be permitted to call the attention of your committee to the fact that a good part of what is imported are goods that bear a very high reputation for quality, like those made by Joseph Rodgers & Sons, George Wostenholm & Sons, John Wilson, &c., and which goods in the main cost considerably more in Sheffield than similar domestic goods are selling for in this market. The enormous duty levied on such goods places them beyond the reach of ordinary people. The statement recommending that the duty on table knives known as "scale tang" be reduced to 25 per cent. ad valorem is very amusing to an insider. We very much doubt if there has been as much as \$1000 worth of these knives all told imported in 25 years, and these only on account of very high quality, while it is a fact that such knives are exported, and we ourselves have been exporting them for 20 years.

In the tariff discussion of 1890 there were submitted five patterns of these knives made in America and five corresponding patterns made in Sheffield. One gross of each pattern made in America sold for \$47.35, and one gross of each pattern made in Sheffield cost in Sheffield \$46.82, and we believe the difference against Sheffield is now much greater.

#### Importations of Pocket Cutlery, &c., for the Last Eight Years, Under Paragraph 153, Dingley Tariff.

Year ending June 30—	Quantity.	Foreign cost.	Duty.	Average ad valorem rate.	Per ct.
1901.....	10,851,937	\$741,660	\$592,702	80	
1902.....	12,168,548	846,538	678,262	80	
1903.....	13,759,364	818,319	639,864	78	
1904.....	13,875,282	896,718	695,147	77 1/2	
1905.....	13,094,058	835,599	664,348	79 1/2	
1906.....	11,502,188	838,130	651,306	77 1/2	
1907.....	14,808,691	1,007,799	788,386	78 1/2	
1908.....	10,802,788	845,553	673,127	80	

Paragraph 153 embraces five classifications. The first two classes are trash knives, costing from 2 1/2 to 4 cents each, foreign cost, the importations of which are as follows:

Year ending June 30—	Quantity.	Foreign cost.	Duty.	Average ad valorem rate.	Percentage of trash knives as to the whole.
1901.....	7,147,711	\$220,691	\$115,726	52	65
1902.....	8,029,386	256,883	136,954	53	66
1903.....	9,903,301	261,341	133,046	51	72
1904.....	9,770,017	293,512	151,506	51 1/2	70 1/2
1905.....	8,881,515	239,953	129,693	54	67 1/2
1906.....	7,669,316	265,340	137,071	51 1/2	66 1/2
1907.....	10,148,027	319,185	166,045	52	68 1/2
1908.....	7,808,425	242,741	131,920	54 1/2	72

It will be seen that these trash knives that are substantially only fit for toys for children and which do not in any important sense come in competition with domestic manufacture, and which on this account were put at the comparatively low rate of a trifle over 50 per cent. ad valorem, embrace about 70 per cent. in quantity of all importations.

The balance of importations, or say, 30 per cent. of the quantity imported, is as follows:

Year ending June 30—	Quantity.	Foreign value.	Duty.	Average ad valorem rate.	Per ct.
1901.....	3,704,226	\$520,969	\$476,976	91 1/2	
1902.....	4,139,162	589,655	541,308	90 1/2	
1903.....	3,856,063	556,978	506,818	91	
1904.....	4,105,265	603,206	543,641	89 1/2	
1905.....	4,212,543	595,646	534,655	89 1/2	
1906.....	3,832,872	572,790	514,235	89 1/2	
1907.....	4,660,064	688,614	622,341	90 1/2	
1908.....	2,994,363	602,812	541,207	90	

The average ad valorem duty on the same being over 90 per cent., and the cost of commissions to foreign buyers and transportation expenses bringing the protection to domestic makers close up to 100 per cent., or double the foreign cost.

In 1882 the American product, according to their own statement, which may be found in 1890 tariff hearings, page 72, was \$1,320,000. This was under a tariff of 50 per cent. ad valorem. On same page will be found their statement claiming their product for 1887 was only \$815,000, which was fairly demonstrated at the time was over \$1,000,000 short of the real amount, as the following calculation will show:

American product for 1882, as per their table, page 72, 1890 hearings.....	\$1,320,000
Imports as per Government statistics.....	\$1,238,198
Add duty, 50 per cent.....	619,099
	1,857,297
Total for 1882.....	\$3,177,297
Add for estimated increase of consumption from 1882 to 1887, inclusive, five years, at 2 1/2 per cent. per annum, equals 12 1/2 per cent.....	397,162
Total for 1887.....	\$3,574,459
According to manufacturers' table on page 72, 1890 hearings, 1887 figures out as follows:	
Importations.....	\$1,419,861
Deduct estimated razors which are included in Government statistics.....	250,000
Leaving value of pocket knives.....	\$1,169,861
Add duty, 50 per cent.....	584,930
	\$1,754,791
American product for 1887, as per their table on page 72.....	815,000
	2,569,791
Amount unaccounted for by American manufacturers.....	\$1,004,668

It is pretty clear that the amount unaccounted for must be added to the amount stated as their product for 1887, making that amount \$1,819,668 instead of \$815,000, and showing that in 1887 the amount of importations, duty paid, was substantially the same as the American product.

We think it quite fair to estimate the increase of consumption at 2 1/2 per cent. per annum. We believe this rate is quite under the real truth. On this basis the consumption for the fiscal year ending June 30, 1908, figures as follows:

Total product, foreign and domestic, for 1887.....	\$3,574,459
Add for estimated increase of consumption from 1887 to 1908, inclusive, 20 years, at 2 1/2 per cent. per annum, equals 50 per cent.....	1,787,229
Total for 1908.....	\$5,361,688
Importations for fiscal year 1908.....	\$845,554
Add duties, about 86 per cent.....	673,127
	\$1,518,681
Add statement of product of American manufacturers, 1908 hearing.....	3,000,000
	4,518,681
Amount unaccounted for.....	\$843,007

We think any reliable hardware house dealing largely in cutlery will agree that 2 1/2 per cent. per annum for increase of consumption is a very low estimate, but in any case the foreign value of knives that come into any sort of competition with the American product amounts to only \$602,812 for the fiscal year 1908, and a good proportion of these do not compete with domestic manufacturers because they are sold on reputation, but such knives being primarily high the cost, on account of superior quality, with 90 per cent. duty added and transportation expenses in addition, puts them out of the reach of most people. The cost of the better grades of knives is considerably higher in Sheffield than like patterns are selling for by domestic makers, and it does not seem fair to the consumer to put a duty on such grades as substantially prohibits their importation and prevents people that want them from buying them on account of their enormous cost. To illustrate: We have two knives before us now, large two-blade knives, as used by mechanics and farmers, one made in America and the other in Sheffield. These two knives are exactly the same pattern, size, &c., and a novice would as soon select one as the other. The one made in America sells for \$4.78 per dozen, and the one made in

Sheffield sells in Sheffield for \$5.10 per dozen, and the latter, when the present enormous duties are added, with transportation expenses, costs to lay down in America \$9.75 per dozen without any profit added for marketing it.

It is our opinion that a very considerable reduction in duties should be made on the grades used by the masses. In this connection we may be permitted to point out that it is our decided opinion that the system of complex duties on cutlery is very unfortunate from the standpoint of honesty. We made a very earnest protest against this system in 1890, saying the tendency would be to drive honest importers out of the business, and this has substantially been our case. To illustrate: Take the third class, or knives paying 40 per cent. ad valorem and 60 cents per dozen, embracing a foreign cost of over 50 cents per dozen and not over \$1.25 per dozen. A dishonest importer can purchase a knife at, say, \$1.31 and invoice it at \$1.25. This knife would cost an honest importer to lay down, duty and expenses paid, \$3.18, while invoiced at an equivalent of \$1.25, it would cost only \$2.47, the difference being a large profit, and no expert can measure such a difference. It is our full opinion this scheme has been worked very largely. In such a case, with an ad valorem duty of 100 per cent., the Government could only lose in duty 6 cents per dozen, and an honest competitor not suffer much, but in the present case it is seen the Government loses 62 40-100 cents per dozen and the honest importer is knocked out.

### FERROSILICON.

**Statement of Walter Gaston of the Electro Metals, Ltd., Welland, Ontario.**

Ordinarily we know it would be very much out of place for us, a foreign corporation, to address the Ways and Means Committee in connection with a tariff schedule covering materials produced by us, and we certainly would not presume to do so now were it not that in a statement made to you by H. C. Harrison, vice-president of the Susquehanna Smelting Company, Lockport, N. Y., asking for an increase in the duty on ferrosilicon. He gives as one of the necessities for such an increase the inability of the domestic manufacturer to compete with the Canadian manufacturer of this alloy, and in doing so cites some reasons so wholly at variance with the actual facts that we, as the chief Canadian maker, and the one he refers to, feel it incumbent on ourselves for the enlightenment of the committee and in the interests of the users of ferrosilicon in the States, as well as in justice to ourselves, to correct.

The statement that we purchase Canadian charcoal at two-thirds of the cost to the Susquehanna Smelting Company is incorrect, as we use no Canadian charcoal whatever.

The statement that we profit by "government bounty fed power" is also incorrect, as the Canadian Government pays no bounty for the development of Niagara power; on the contrary, the Canadian power companies pay to the Canadian government a royalty on each electric horsepower developed.

While we do not know just what the Susquehanna Smelting Company pays for electric power, the information we have fully warrants us in saying the statement that we pay 25 per cent. less for power than that company is also incorrect. Should we be paying any less, it must be remembered that Niagara power costs more the farther the consumer is located from the generating plant, and that power at Lockport would, therefore, naturally cost somewhat more than at Niagara Falls and immediate vicinity. Our power cost should be compared with the latter, and in this connection we would say that we have been offered power on the American side for less than we are paying on the Canadian side.

We certainly do not consider that, in the cost of producing ferrosilicon, we have any advantage over the producer in the United States, so far as the elements that enter into the production, i. e., labor, raw materials, and power, are concerned.

Our labor is fully as high as in the United States, on the basis of wages actually paid, as the American consul at Niagara Falls, Ontario, will vouch for, and higher on the basis of efficiency.

All our raw materials, excepting silica, come from the United States, the additional freight charges making the cost of these materials greater than to the producers in the United States, to say nothing of very much greater cost of the Canadian silica we use.

Furthermore, there are the additional freight charges of the Canadian railroads on ferrosilicon into the States, a very material addition to the cost.

As a further evidence that ferrosilicon can be produced as cheaply in the United States as by us at Welland, is the fact that in the face of the Canadian duty of \$2.50 per ton the United States producers have been able to make such low prices in the Canadian market as to either undersell us or force us to sell at most discouraging figures.

As to the statement that we have located our works on the Canadian side, using Niagara power, in order to save freight and transportation charges from Europe: In the first place, this would give the impression that we are a Euro-

pean company, which is not so. So far as incorporation is concerned, ours is a Canadian company but our stockholders, both in numbers and interests, are principally citizens and business men of the United States. In the second place, if we were a European company, we would not want to work under the less favorable conditions of the manufacture of ferrosilicon existing in European countries, but would aim, as we are now doing, to work under the much more favorable conditions existing in the United States.

When we located in Canada our aim was to make pig iron and some other iron products, as will be seen from the following extract from a paper on "The Reduction of Iron Ores in the Electric Furnace," read by R. Turnbull (vice-president of our company), of St. Catharines, Ontario, at the March (1908) meeting of the Canadian Mining Institute, i. e.: "In the spring of last year R. H. Wolf of New York, and I decided to erect a plant in Canada in order to demonstrate that iron ore could be commercially and profitably smelted in the electric furnace."

As the use of the electric furnace commercially, in the production of pig iron, depends largely on the cost of coke, we selected Canada as a favorable location for our plant, because of the high price of this material, and Welland, because of the advantages it offered in rail and water transportation, and in Niagara electric power available for the entire year.

In the beginning we had not the slightest idea of making ferrosilicon, and it was only when the results of certain experiments then being made in the making of pig iron in an electric furnace, had demonstrated the necessity of further experimental work before the production of it on a commercial scale could be undertaken that we incidentally turned to ferrosilicon, with the making of which some of our technical men were familiar, as a source of revenue pending the completion of our pig iron experiments.

Regarding the statements of Mr. Harrison relative to the cost of water power and the cost of making ferrosilicon generally in European countries, they are so misleading that it is but right for us to state what we understand to be the actual facts.

In the first place, it must not be understood that ferrosilicon is being actually made or is likely to be made at all of the water power he names. There are undoubtedly many places in the countries he names where water power has been and can be developed comparatively cheap, but these places, as well as the places he mentions, are chiefly found at points difficult of access—in most cases in the mountains, where, as in Sweden, the French Alps, the Austrian Tyrol, &c., the maximum power is only available for about seven months—October to April—owing to the scarcity of water in the rivers, which are fed by glaciers in the mountains, and from which practically no supply is obtained between the months of October and April. In most cases only one-third of the power is available during the five months—November to March—thereby necessitating the development of three times the power required for these latter months.

Thus in the case of the manufacturer developing and owning his own power, as is quite general in Europe, while in some instances \$8 might be taken as the cost, based on the maximum power, as the latter is only available for seven months of the year, the overhead depreciation, interest, &c., charges which must be made for the entire year materially increase the power cost, in many cases at least 50 per cent.

Many of the European works produce other products than ferrosilicon, which products must be produced during the entire year, and in such cases to insure a sufficient supply of power for this purpose it is customary to close down the ferrosilicon and other alloy furnaces as soon as the power commences to fail. Here again the charges covering the metallurgical staff (which must be retained during the stoppage), the cost of stopping and starting the furnaces, always considerable, interest charges, &c., materially add to the power cost.

It must not be considered that \$8 power, as above, can be had all over Europe. On the contrary, it is very rare; the average charge being from \$10 to \$20, the low charge of \$8 being only made in cases where it would be impossible to produce anything at all unless power is very cheap. A proof of this is that one of the foreign works using \$12 power, shows a much lower cost price in its product than other works using \$8 power; the reason for this being mainly the more favorable location of its works and the availability of a larger percentage of its power during the winter. As to cost of power in Sweden, the Swedish producers of ferrosilicon, with whom we are in touch, are paying as much as \$20 per horsepower per year.

It is possible to buy power in some parts of Europe at \$8 per horsepower, but this is only six or seven months' available power, it being generally what is known as "second rate" or "surplus" power, to be had from those generating stations having a surplus during the summer months when the maximum power can be obtained, and when much less power is required for lighting purposes, &c.

Surplus or second rate power can be had on the American side of the Niagara River at an exceedingly low rate, and is supplied continuously during the year. The only dis-



advantage in the use of this power is that the power company has the right to stop the supply during from 4 to 6 hr. of each day. However, as the consumer, by buying a small amount of firm (first-class) power can keep his furnaces going, and as he can also work by intermittent charges, this second rate power is more advantageous in the States than the same or six or seven months' power is in Europe.

As to the water powers Mr. Harrison mentions as capable of development for electric furnace work, in most cases their locations mean very high freight rates on raw materials into the plants and on the finished product out; and these reasons alone, in the most favored cases, make them expensive locations, and in the majority of them impossible locations for ferrosilicon plants.

Ferrosilicon of the higher percentages, on which the increased duty is asked, can be made as cheaply in the United States as in Europe. Though in the latter case the labor costs are less, the materials really cost more, iron and silica being about the same, the coal, coke and charcoal costing much more, particularly the coke, which costs from \$7 to \$8 per ton. As the cost of power determines the location of plants for the making of the higher percentages of ferrosilicon, makers must go to the power, and in France, from whence has been imported the great bulk of the higher percentages of ferrosilicon into this country, the makers have had to locate their plants in the French Alps, at the expense of high costs of freight on materials in and finished products out, the rate to seaboard being from \$5 to \$6 per ton, to which, if ocean freight to New York, Baltimore, &c., including insurance—say, \$2.75—be added, \$7.75 to \$8.75 per ton must be added to the foreign cost at works, making, with the duty of \$4 per ton, a total charge of \$11.75 to \$12.75 per ton to deliver the product at a port of entry in this country. This certainly should be a very good protection on a product of which the labor costs in the United States should not exceed, say \$7 to \$8 per ton on 50 to 60 per cent. ferrosilicon, which, of the higher grades, is chiefly used in steel making.

So well satisfied are we that ferrosilicon of the higher percentages can be made cheaper in the United States than in European countries that we have no hesitation in saying that we would be perfectly willing to undertake the production there in competition with foreign makers, without the aid of any duty whatever and with every confidence of success.

To do this it would be necessary to use Niagara power, although we could readily do so at cost to the present producers at Niagara Falls. There are other locations in the States where power can be had at a considerably lower cost than Niagara power, and we venture to say that electrolytic ferrosilicon is now being produced elsewhere in the United States at a considerably less horsepower cost; therefore, even the cost of Niagara power should not be taken by any means as the lowest cost of power in the States.

As in European countries, inaccessible and accessible power are to be found in the United States costing more or less, as the case may be, it being simply a matter of location and barter.

There are two other matters to which we beg to call attention: One is the selling price of ferrosilicon, taking 50 per cent. as the grade of the high percentages chiefly used in the making of steel. This, within the last two or three years, has sold as high as \$115 per ton of 2240 lb., while at present the price has dropped to about \$62 to \$64, the lowest price at which it was ever sold, and at which the foreign makers are all losing money. Although this low price has been made during the present business depression, it is, by reason of the largely increased manufacture, not likely that the price will ever again, as a rule, range higher than \$70. The other is that, unlike ferrochrome, ferrotungsten, ferrovanadium, &c., in which the cost of materials increases with the higher percentage of ores used, the cost of materials entering into the production of the higher percentages of ferrosilicon does not increase as the percentage of silicon increases, but, on the contrary, decreases, the silica, the cheaper material, taking the place of iron, the more expensive material; therefore the higher prices of the past and the increased percentages of silicon should not be considered as a basis for an advance in duty, as has been urged by some of the domestic manufacturers.

### PIG IRON.

**Statement of Edgar S. Cook, President Warwick Iron & Steel Company, Pottstown, Pa.**

The Warwick furnaces are typical merchant blast furnaces. They are not connected with any steel works, nor with any works wherein pig iron is fabricated into finished forms. All the iron made is sold at competitive prices. Different grades and qualities of pig iron are made by the same furnaces, to suit the varying requirements and specifications of the consuming public. The Eastern merchant blast furnaces are located in Pennsylvania, New Jersey and New York, East of the Allegheny Mountains. The sale of their pig iron is confined to a narrow strip of territory along the Atlantic Coast. Their iron cannot go South of Baltimore,

in view of the competition of Virginia and Alabama furnaces, nor West of Altoona, where it meets Western iron. The consumptive requirements of northern New York and Pennsylvania are met by furnaces located at Buffalo, and the Beech Creek District of Pennsylvania.

While Eastern pig iron cannot invade the districts named, the territory naturally contributory to the Eastern merchant blast furnace is easily reached by Virginia and Southern irons, as well as Buffalo irons. Large tonnages of Western iron are also sold and delivered to Eastern consumers, especially when the industrial conditions are not favorable. It can thus be easily seen that the Eastern merchant blast furnaces are peculiarly sensitive to any change in tariff duties that would add to the competition for the sale of their product. Ocean freight rates from England or Germany to Atlantic ports of entry offer no protection, as the inland railroad rates of transportation from the furnaces to many of the points of consumption are in excess of the ocean rates.

The profits of the Eastern merchant blast furnaces do not bear any comparison to the profits of other branches of the iron and steel trade. While there has been a growth of capacity in the last 10 years, it has been brought about largely through the necessity of reducing costs of production by increasing the capacity of the furnace and equipping it with the very best of modern machinery and labor saving appliances in order to protect the investment already made and maintain the competition with other districts. A large tonnage multiplied by a small profit per ton of iron fairly represents the average conditions of the past 10 years.

The continued existence of the Eastern merchant blast furnace is of importance to the Eastern consumer as a comparative nearby source of supply for his raw material. Preference is therefore likely to be given to the local iron, other things being equal. This preference would not be likely to extend, however, to paying more per ton for Eastern pig iron than English or German pig would cost delivered at the works of the consumer. There are a few small Eastern furnaces so located with respect to ore supplies owned by themselves that they can run under any and all conditions. The product, however, is small, and under ordinary conditions they are an unimportant factor.

The Warwick furnaces, located at Pottstown, Pa., may be taken to illustrate the class of Eastern merchant blast furnaces that buy in the open market all of the ore, fuel, &c., required to supply their furnaces. While the bulk of the pig iron made is consumed within a radius of 100 miles, with railroad transportation rates varying from 25 to 90 cents per ton of iron, yet a large tonnage is shipped to and consumed at points in New England, where the railroad freight is \$2.10 per ton. The ownership of the Warwick furnaces is widely scattered, being distributed among 600 stockholders. The capital stock is \$1,500,000. Many of the stockholders are women. No single holding amounts to over \$100,000 at par value of the stock. The capitalization, including bonds issued, does not exceed \$6 per ton of iron capacity.

The aim of the management has been to keep the plant up to date in every particular, so as to secure the most effective instrument to produce pig iron at the lowest possible cost of converting the raw materials into a salable product.

The tariff duty of \$4 per ton of pig iron came into effect at a time when raw material was low enough to permit of the production of pig iron at such a cost that the duty of \$4 per ton, as compared with \$6.72, was not productive of any serious consequences, so far as foreign competition was concerned.

Experience has shown that the duty of \$4 was sufficient to protect when such protection was most needed, and at the same time not too high to become a source of considerable Government revenue when foreign iron was needed to make up any deficit in the domestic supply to meet unexpected large increase in the consumptive requirements of our country. It has served its purpose so well that it would scarcely be wise to run the risk of disturbing the balance apparently so satisfactory to maker and consumer.

Pig iron is a true barometer of trade from the fact that its production is so widely scattered and that it is all sold without any concert of action, the competition being unrestricted. Prices are determined by the consumptive demand, the production and the competition of the makers.

The net earnings of the makers have not been sufficient to build new furnaces. The new furnace of the Warwick Company was built from the proceeds of the new stock sold to old and new stockholders. The earnings over a period of 10 years, 1898 to 1907, inclusive, have not been sufficient to more than keep the furnace in a good state of repair and pay very moderate dividends to stockholders. These statements are proved by figures taken direct from the books of the Warwick Company.

Calculated upon the tons of iron made the "bad debts" written off 1897 to 1907 were insignificant. During the years 1897 and 1898, the cost of production, based upon low price of ores, coke, railroad freight rates, labor, &c., was so low that we were almost in a position to export iron. In fact, Alabama and Virginia furnaces did make some ship-



ments to England. We sold several lots to New York exporters for shipment to Havana, Panama and Chili.

Only about 33 per cent. of the Eastern merchant blast furnaces were able to run during the years 1897 and 1898. Since 1877 the Warwick furnace has always been in the race, except for a few months at intervals of three to five years, when necessary repairs were being made.

Accompanying an increased demand for iron and the starting of additional furnaces, raw materials rapidly advance in price. Railroad freight rates on raw material and pig iron are also sensitive to improved conditions, but are slow to respond to adverse trade conditions.

During the active demand for iron the first half of 1907 many thousand tons of English and German iron were brought into this country to make good the deficit in the American product, thus giving to the Government no little revenue, but without affecting injuriously the Eastern merchant blast furnaces. English iron was delivered to points in eastern Pennsylvania, after paying 80 cents railroad freight per ton from ocean port to works at a lower price per ton than our cost of manufacture. Following the financial crisis of 1907, orders for English iron ceased, but shipments upon contracts continued to arrive, causing no little embarrassment to local makers.

With the decreased consumption of pig iron for 1908, consequent upon partial industrial paralysis, fully 75 per cent. of the capacity of the Eastern merchant blast furnaces was forced to temporarily discontinue operations. Prices for iron fell below cost of production, due to the competition of American furnaces in the Eastern territory. The trade of England and Germany was depressed at the same time. Without the tariff duty of \$4 per ton on pig iron, our Eastern markets would have been invaded by foreign iron at prices several dollars per ton below our cost of manufacture. Such importations would doubtless have added to the revenue of the Government, but at a time when the Eastern merchant blast furnaces would have been crushed, with the attendant suffering to the employees and their families.

Any reduction whatever in the duty of \$4 per ton might have made the bad conditions worse. Under the conditions of 1908 any inducement to encourage importations of foreign iron into our Eastern markets would scarcely be looked upon as wise, even from the standpoint of a tariff reformer, to say nothing of the point of view of a protectionist.

Running under conditions of greatly reduced production compared with capacity, the fixed expenses increase rapidly per ton of iron produced. Our sales of iron from April to September, 1908, inclusive, averaged \$14.94, the cost being \$14.88, showing estimated profit of 6 cents per ton. The failure of a rolling mill company owing us \$2700 just about wiped out our profit on the iron made during the same period.

Upon the basis of \$14.88 cost f.o.b. cars, Pottstown, Pa., plus \$2.10 freight to Boston and 25 cents commission for selling, the price should have been not less than \$17.23 delivered, to cover actual cost.

English iron, Cleveland brand, at \$12 Middlesboro, plus \$2 freight and charges, could be delivered Boston at \$14. English iron could be placed at Philadelphia for \$14. Freight and charges, Pottstown to Philadelphia, 80 cents, would make a total cost of \$15.68.

The duty of \$4 per ton prevented English iron from invading the Eastern Coast, thus preventing the further curtailment of the output of the Eastern merchant blast furnaces. We argue, therefore, whatever sentimental reason seemingly may exist for any change in duty on pig iron, it is not justified by the facts as presented.

American competition has been sufficient to keep the selling price of iron down to cost. Steady and continuous running is essential to the blast furnace, and especially to keep organizations intact. A loyal, capable organization, with teamwork developed by practice, is considered to be worth 25 per cent. of the cost of the plant.

The great difference in cost between 1898 and 1908 can readily be seen as follows:

Year.	Ore cost per ton of iron.	Fuel cost per ton of iron.
1898.....	\$4.54	\$3.02
1908.....	8.11	4.00

The actual cost of conversion for 1908, as compared with 1898—that is, labor, salaries, fixed expenses, &c., with two furnaces in operation—is as low as in 1898, notwithstanding that the wages paid labor are considerably higher than during 1898. The increased wages paid employees have been neutralized by the benefits derived by expenditures on capital account. While cost of fuel for 1908 per ton of iron shows \$4 as compared with \$3.02 for 1898, the consumption of fuel per ton for 1908 was fully 300 lb. less per ton of iron than for 1898. Attention is called to these items in order to show the practical value of expenditures on capital account, to improve the efficiency of the furnaces and to lower the cost of conversion and thus helping us to pay the higher wages.

The increased cost per ton of ore delivered to furnace, and of coke, is due to higher prices paid f.o.b. cars at ship-

ping points for these raw materials, and also to the higher rates of transportation paid to railroad companies, 1908 as compared with 1898. The railroad freights paid on incoming materials entering into the cost of a ton of iron constitute from 35 to 50 per cent. of the total cost of pig iron. There are exceptions, as related to certain small furnaces working local material, but the statement is true of the Warwick furnaces and other furnaces of the East working under like conditions.

As to what percentage of the increased cost of ore and coke is due to higher wages paid miners, higher prices for supplies, &c., I am unable to specify. All indications, however, would seem to show that the low prices of 1898 are not likely to be repeated except as the result of some dire calamity in the industrial and financial world.

Those who conducted business enterprises through the period from 1893 to 1898, inclusive, would scarcely welcome such a return, from whatever cause, and the community at large would doubtless prefer a prohibitory tariff scheme rather than endure again the era of low prices of 1893 to 1898. Following upon an increased consumption of pig iron and a larger production, the cost of ore per ton of iron will increase through an increased demand. Many of the Eastern ore mines sold their ore during 1908 at little or no profit and in some cases at a loss, in order to keep the mines in operation. The question of a foreign ore supply is surrounded with many uncertainties so far as the Eastern merchant blast furnaces are concerned.

We feel certain that even a small reduction in the duty on pig iron under certain conditions would seriously embarrass the Eastern merchant blast furnaces, while it might have little or no effect upon the Western blast furnaces, protected by a long distance railroad haul from the coast to the interior. Acting, then, upon such an assumption, any reduction in the duty on pig iron based upon a reduction of duty on iron ore, or even the placing of ore on the free list, would be risking a certain loss in the hope of gaining an advantage that might not be realized, based upon the known sources of foreign ore supply.

The present chief sources of supply of foreign ore are Newfoundland, Sweden, Spain and Cuba. Scattering lots come from Russia, the islands of the Mediterranean and Algeria. The supply from Newfoundland is limited. A large portion of the product of the mines is marketed in Germany. The high phosphorus content makes it a desirable mixture for the German furnaces, producing a high phosphorus iron for their basic Bessemer steel converters. This process for making steel is not used in the United States, so that only a small percentage of the Newfoundland ore is desirable in the ore mixture of merchant furnaces called upon to furnish pig iron comparatively low in phosphorus content.

Sweden: Experience has shown that the demand for Swedish ores abroad, especially Germany, is such that they are only offered to the American furnaces at prohibitory prices. Even if duty was removed, Swedish ores would not help the production of low cost iron.

Spain: The three largest producing mines of best grade of ore in Spain, I am informed, are owned and controlled by English, German and French capital. The product of these mines is used by the owners. The tonnage of good grades of Spanish ore available for the American market is limited. Inferior grades, not acceptable to foreign furnaces, are in more abundant supply. These ores, however, are just as undesirable for the American furnace as for the English, German and French.

Any considerable demand from American sources would not only enhance the Spanish owners' ideas of value, but would bring about a revolution in ocean freight rates, as bearing upon the cost of transportation. In such an event the ore itself would have to pay sufficient revenue to the ship owner to afford him a profit on the carriage. This would mean a greater advance in ocean freight rates than the present duty on iron ore.

The present low ocean freight rates are based upon the ore being sought after by the vessel as ballast cargo, because of the dangerous passage over the Atlantic for vessels not well loaded. This applies to the winter months especially. The American user of foreign ore to the exclusion of the domestic product would run extra risks in having his ore supply at such a great distance and subject to conditions adding to cost bearing no relation to the conditions of the iron trade in the United States.

Cuba: The known iron ore resources of Cuba are largely owned by the Pennsylvania Steel Company and the Bethlehem Steel Company. As a rule they are not offered for sale. Several small operations, with limited tonnages, are now, or soon will be, prepared to sell their ore in the American market. This tonnage, however, is not likely to be large for several years yet to come.

If the iron ore interests of the United States are satisfied to have the duty of 40 cents per ton cut in half, or removed altogether, there will be no objection on the part of the Eastern merchant blast furnace companies. At the same time, if a reduction in whole or in part should be considered a convincing argument in favor of a reduction in the \$4 duty

on pig iron, it would be exchanging at the best a small benefit (and even then a doubtful one) for an existence at the mercy of our European competitors.

In addition to the formal statement presented above, Mr. Cook has also forwarded to the committee a memorandum to the effect that members of the Eastern Pig Iron Association had examined his statement, had accepted it as representing conditions in the average merchant blast furnace operating in the East, and had approved his action in preparing and forwarding it to the Ways and Means Committee.

### The Tait Universal Tool Holder.

Strength, efficiency and convenience, coupled with the economical use of steel, are the principal claims made for the tool holder here illustrated. This holder, which is the product of the Van Doren Mfg. Company, Chicago, Ill., consists of two parts, one forming the base and the other the compression cap or clamp. In Fig. 1 the holder is shown with a round forged tool in position, together with cutting tools of other shapes which it will accommodate. Cross sections of the tool in Fig. 2 clearly illustrate the form of the separate pieces composing the holder and the method of its application to different cutters.

Each of the parts is machined from a solid piece of machine tool steel, the cap being channeled to fit over the slotted T leg of the base. This form of construction gives a three point bearing on the cutting tool, which in

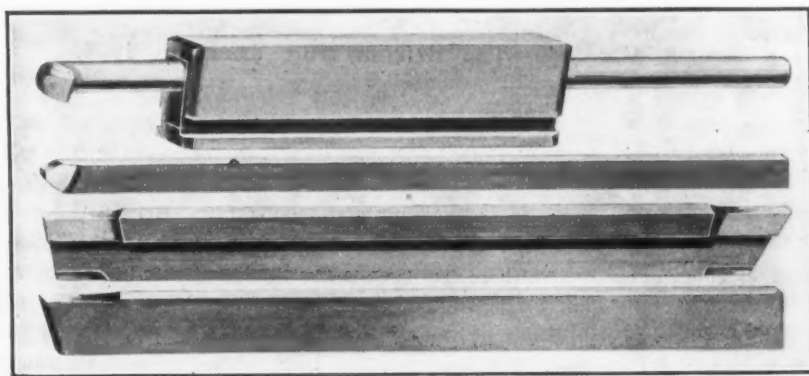


Fig. 1.—The Tait Universal Tool Holder and Tools Made by the Van Doren Mfg. Company, Chicago, Ill.

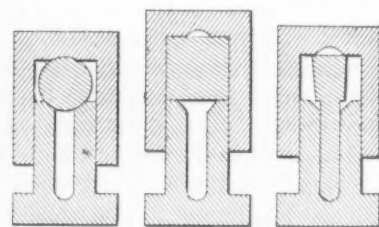


Fig. 2.—Cross Sections of the Holder with Tools of Various Section.

the case of hexagon, octagon and round shapes, is made more effective by bevelling the inside corner of the T legs at their upper extremity. No screws or bolts enter into the construction of the holder, and to insert or release a tool it is only necessary to slip off the cap.

Among the advantages claimed for the holder are that it has full bearing upon the tool through its entire length, making it very rigid; that steel of any length from less than an inch upward can be used in it; that it will hold steel of any shape, and that because of its simple form and heavy construction it is not subject to breakage from any ordinary causes. It is applicable to a wide range of service, and can be used in slotters, shapers and screw machines as well as upon lathes or planers. Because of the long lengths of steel that can readily be adjusted in it, it is also serviceable for holding boring tools; the blades of cut off tools also find additional support in the T slot of the base, and if buckled when sprung into the holder are held straight while cutting. The holder is made in 11 sizes, ranging from  $\frac{1}{4} \times \frac{1}{2} \times 4$  in. for the smallest to  $1\frac{3}{4} \times 2\frac{1}{4} \times 18$  in. for the largest.

**The Indiana Steel Company.**—In answer to inquiries concerning the amounts appropriated by the United States Steel Corporation for the building of the Gary, Ind., works, it is interesting to note that \$10,000,000 was set aside in 1905, \$21,500,000 in 1906, and \$18,500,000 in 1907, a total of \$50,000,000. No appropriation was made in 1908, and none was necessary, as the total so far expended is not greatly in excess of \$40,000,000. In the original announcement it was stated that an outlay of

\$75,000,000 was contemplated from first to last. While the Indiana Steel Company is a separate corporation, it is organized as a subsidiary of the Federal Steel Company. The operation of the Gary plant, however, is carried on under lease to the Illinois Steel Company in the same way in which the Union Steel Company and Clairton Steel Company plants have been operated by the Carnegie Steel Company.

### Central and South American Notes.

SAN JOSE, CENTRAL AMERICA, December 23, 1908.—Business will be brisker in Central America now that the crops have been so large. Renewed interest is shown in railroad building and extensions and all the war scares are over. The gold mines of the Bluefields region have attracted a number of capitalists, mostly from the United States, and several consignments of mills and other machinery are beginning to arrive. Not much has been said lately about the Prinzapulka (Mosquito Coast of Central America) region lately; still, there is a steady output of coarse gold, though none of the mines is worked in a large way as yet. When the railroad from Nicaragua is finished these mines will also be heard from.

The Government of Colombia is doing much to attract the attention of railroad builders and miners to that country. Several surveys for lines from San Buenaventura on the Pacific to cross the Andes and reach the

central plains are now in progress. Bogota, the capital, is practically isolated on a high plateau. The climate is fine and the surrounding country produces well, but it takes a couple of weeks by horseback and river steamer to reach a point communicating with the outside world. It is now proposed by several liberal members of the Government to enact (and put into practice) laws favorable to foreigners and foreign investments generally.

The Republic of Colombia is large, but sparsely populated, and, up to the last two years, in a perpetual state of revolution. Several of the heads of the present Government have dwelt in the United States, and it is to them that many of the present reforms are due. The railroad from Cartagena on the Caribbean Sea, southward through to the capital and the frontier of Ecuador, would make a most important link in the Three Americas Railroad. This line would tap vast regions producing nearly everything among the valuable tropical and subtropical crops, rubber, cocoa, coffee, tobacco and sugar not being the least of them. Copper, gold, silver, platinum, emerald and other mines flank both sides of the projected line, but at present are scarcely worked.

The Rio Grande Railroad (Brazil) is pushing its branches actively into Matto Grosso and westward to Bolivia. Most of the capital is British and French, though part is held in Germany. The work of dredging and cleaning up the ports of Pelotas, Rio Grande and Paranaguá continues, and several of the bars to ocean navigation have been already removed. Four large cargoes of rails and railway material have arrived at these ports, and business in all lines is reported very brisk.

C.



# THE IRON AGE

Established in 1855.

New York, Thursday, January 14, 1909.

Entered at the New York Post Office, as Second Class Mail Matter.

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						HARDWARE EDITOR.

## The Route to Prosperity.

The reviews of finance, industry and commerce in 1908 have appeared in the usual volume and in nearly all of them the slowness of the recovery from the conditions immediately following the panic is regarded favorably. The futility of the attempts made last year to restore confidence by strongly affirming not only the existence of confidence but of prosperity itself is generally admitted in these summaries. It is once more said, for more than the one hundredth time since high tide prosperity departed, that underlying conditions are sound and that the generally prevailing hopefulness at the beginning of 1909 means a positive advance this year toward broader operations, with a considerably larger employment of capital and labor. Some of those who try to look into the future consider that time is the principal element in full recovery of lost ground; that having held to a considerable degree the status which existed before the panic, both as regards prices of commodities and labor, the orthodox method of getting back to abounding prosperity is to advance step by step from the present basis. One writer, observing that all experience goes to show that one year is a short time for complete recovery from such a blow as credit received in October, 1907, says:

It is not only the credit system which must be reconstructed, but the resources of the people, the relation of supply and demand, and the power of meeting both home and foreign competition.

It is important to know what these various reconstructions involve. It was quite well agreed in 1906 and in those months of 1907 in which the producing and transporting capacity of the country was strained almost to the breaking point, that the country was suffering from "too much prosperity." That did not mean too much real prosperity; but a prosperity that involved wasteful and uneconomic operation, and in the case of labor the smallest output for a given wage that had been known in years. It was said commonly in that period that a slowing down would be salutary. But when the slackened pace came it was in a way and due to causes that produced by no means salutary effects. Yet at all times in the past 14 months and more there has been prevalent a spirit of optimism that minimized the consequences of the panic and refused to believe that the return of good times could be long delayed.

The reconstruction which some students of the situation now have in mind involves more than such repair of the resources of the people as comes through time and the economies learned in a period of depression. Their view is that reconstruction means also readjustment—such a readjust-

ment as has not yet taken place. They raise a question concerning the method that has been followed in the past year of avoiding or postponing any direct issue on the proposal to get up again by first getting down. They point out that there has been no serious enforcement of economies by the mass of our people; that the high cost of living that has long been complained of is still a prominent factor in the situation; that the popular method of meeting the general complaint on this score is still that of maintaining wages, and that where such maintenance means hardship to employing interests the remedy is to be found in raising the price of product, as in the case of transportation. How to reconstruct "the power of meeting both home and foreign competition" on these lines is the problem on which the future may throw light; at present the perplexities attending its solution are many.

After all, it may be found that the cure for any unhealthy features of the situation will be applied in the old-fashioned way; that the farther we get from the crash of 1907 the more automatic will be the adjustment. Since the dangers that particularly called for the interposition of strong hands are growing less and less, the unhampered action of natural forces may not have the same terrors.

## The British Iron Trade in 1908.

In comparing iron trade conditions in Great Britain and the United States in 1908 it would seem that the falling off from 1907 in the two countries was in inverse ratio to the amount of ado about it. British comment has been doleful the year through, while in the United States there has been a continuous stratum of optimism underlying the poor surface showing. Yet gauged by pig iron output the falling off in this country was 38 per cent. from the preceding year, while in Great Britain it was only about 12½ per cent., or from 10,400,000 tons to about 9,100,000 tons. And now that the summing up has been made, the reviews of the British iron trade in 1908 grant that perhaps the troubles of the year were exaggerated. In pig iron production 1908 exceeded all years but the three immediately preceding it, while the output of steel was probably only exceeded in 1906 and 1907. Without knowing what a sharp contrast between one year and the next is, in the American way of measuring contrast, the British iron trade admits that it was just because 1907 was so phenomenal that 1908 seemed so barren, and consolation is found by the *Iron and Coal Trades Review* in the fact that a year as good as 1907 cannot be expected more than once or twice in a lifetime.

The pig iron trade in Great Britain, like that in the United States, found raw material prices last year higher than the pig iron market warranted. Yonder both ore and coke were kept on a plane only fractionally less than the high level of 1907, while at home ore was reduced about 10 per cent., and coke at \$1.40, the low point, was 30 per cent. below the price at the close of 1907. The pig iron market in Great Britain, in contrast with the domestic market, was at low point in the first month of last year, No. 3 Middlesbrough foundry iron being then about 48 shillings 6 pence, while at the end of the year it was around 49 shillings. The high point was reached in midyear, and the year's average was about 50 shillings 6 pence, against 56 shillings in 1907. Finished material prices declined throughout the year. Marked bars, which may be taken as a criterion, fell 20 shillings, or to £8 at the close; common bars from £7 10 shillings to £6 5 shillings; ship plates, 10 shillings, or to £6; angles, 10



shillings, or to £5 17 shillings 6 pence, Middlesbrough, and steel rails, 10 shillings, or to £5 10 shillings, while as low as £5 5 shillings is said to have been accepted. The drop in structural material was less than in some lines and more than in others, or from £5 9 shillings at the beginning of the year to £4 14 shillings at the close. A marked feature was that British structural mills, which have usually been out of the race whenever their Belgium and German competitors were hungry, have for some months been meeting and even going below Continental prices.

A more encouraging view was taken of the outlook at the beginning of 1909. Pig iron consumers were paying more on future shipments than for prompt iron. In rolled steel products the effect of recent shipbuilding orders was apparent, and rail mills were better off for orders than in a good many months.

In British metal working lines the situation was aggravated last year by the serious strike in the shipbuilding and machinery trades of the Northeast Coast. The men returned to work at reductions in September after seven months' idleness and the loss of millions of pounds to employers and men. The trade disputes of the year up to November 30 numbered 357 in all British industries. They involved 297,854 workmen, who lost 10,506,600 working days. In 11 months of 1907 but 137,142 workmen were involved in strikes, and their time losses were 1,978,100 days. Thus the number of strikers was more than doubled last year and the loss of time was multiplied by five. The record affords another illustration of the British workman's stubborn insistence on striking, suffering and finally accepting defeat—all on a falling market.

### Machine Tools as Loan Collateral.

It was not many years ago that banking institutions looked askance at machine shop equipment as a basis for loans. Manufacturers asking accommodations with no other security to offer received few favors, because machine tools were believed to depreciate with exceptional rapidity from the day of their installation. It was supposed that if the necessity should arise of disposing of them at forced sale to meet the owner's obligation they would bring but little, and doubtless the experience of those earlier days had demonstrated that such was the case. But conditions are not now the same, and the viewpoint of the banks is very different. It has been proved that second-hand tools always have good value in proportion to their age and the care expended upon their maintenance. The institutions in manufacturing localities which depend upon loans for their incomes have grown to realize this and are now willing to consider the equipment as satisfactory a basis of credit as anything else in the way of personal property.

No better criterion of rock bottom values is afforded than sales at auction, as while prices paid may be too low they are rarely too high. The auctions of machine tools which have been held in the past few years have always found prices quite high as compared with the market. Even in the duldest times, like those of 1908, the sacrifice to the owner has not been great, and when the market is strong the prices paid for used machinery have approached and even passed those for new machinery, because of the quick delivery. The most famous auction of the kind, an event frequently alluded to, was that of the Shaw Machinery Company, Lowell, Mass., in the summer of 1906, where bids ranged nearly or quite even with the then existing lists of the manufacturers, and in some

cases exceeded them, with even a wider margin over the prices paid for the tools when they were new. The recent sale of the plant of the Eastern Shipbuilding Company, Groton, Conn., is another such example, for prices were not much less than the original cost to the company. An even more striking illustration of the value of second-hand machinery is that of four D. W. Pond planers built in 1880 and sold new at \$540. They were recently taken in trade by a dealer and sold in Chicago for \$400, which is surely but a slight shrinkage after nearly 30 years of active use, though it must be stated that they had been well cared for by their owner. Doubtless their value to-day is greater than it was 20 years ago, because of the great change that has come over the market for used machinery. They were the first of the type of heavy tools since developed to such perfection of design.

It is well known to the dealers that any machine built by the leading manufacturers in the last 10 years is eagerly sought. The high class machines which are now being shipped from the shops of their builders will have a long life of usefulness, and years hence will have a market value not greatly less than the present list for new tools. It may be that some revolutionary element will enter into machine design or operation; something as radical in its influence as the high speed steels have been. But values will be maintained, it is universally believed, as have the values of machinery built before the advent of the new steels, with the same tendency, perhaps, to increase rather than decrease. Consequently, second-hand machinery will retain its place as a collateral of good value, and will be so recognized by the banks. The owners of machine shops will escape one of the hardships of many of their predecessors in the field, of being compelled to do without sufficient bank accommodation because the equipment of their works was considered of dubious value.

With pig iron production in the United States in 1908 not far from 15,875,000 tons, the year comes close to the record of 1901, the year of the formation of the United States Steel Corporation, when 15,878,354 tons of pig iron was made. It will be found, however, that the iron and steel statistics of the two years will differ considerably in respect to finished product. For example, the steel rail production of 1901 was 2,874,639 tons, while for 1908 it will probably not be above 60 per cent. of that amount. In 1901 the output of structural shapes was 1,013,150 tons. The total for 1908, judging from the statistics already available as to the product of the fabricating works, will probably be well above that figure. The total of wire products last year, it is safe to say, was also in excess of that for 1901, when the wire rod production was 1,365,934 tons. It will be interesting to compare the records of the two years in steel works and foundry products. Basic pig iron production last year greatly exceeded that of 1901, while Bessemer pig iron fell below the record for the earlier year. In the scale of operations in iron foundries the two years will probably be found not far apart.

### CORRESPONDENCE.

#### The Cost of Hydro-Electric Power in Norway and Sweden.

To the Editor: Referring to *The Iron Age* of December 10 and the statement on "Steel Hardening Metals" rendered by the Susquehanna Smelting Company, Lockport, N. Y., in the tariff hearings at Washington, I desire to contradict the extremely exaggerated statement of cost of electric horsepower in Norway and Sweden. I

am closely connected with installations of this kind, and I cannot trace anything like a \$6 to \$7 rate; in fact, I should be glad if the company would give me the address of such plant if really in existence, so that I may take advantage of it. I can assure you that even a price of \$9 to \$10 per horsepower is not obtainable even for a proposition involving very large quantities, and that figure is only 50 per cent. in excess of that claimed in the statement.

The fact is that at the present time American producers of steel hardening metals are selling at less than the cost of production of manufacturers in Norway and Sweden.

With regard to wages, I must also contradict the statements so far as Norway is concerned. Skilled labor in this line is not to be had in this country, and in Sweden it is not much better. Children and old men might be obtained at the wages quoted. In Tyrol probably the workmen also in due course will know what they want, if they work at present for 5 cents an hour at a reasonably well located place of manufacture. There are several works in Norway and Sweden that would be glad to withdraw from their so-called cheap horsepower contracts because they are unable now to make both ends meet.

OLAF R. OLSEN.

CHRISTIANIA, NORWAY, December 29, 1908.

#### **The Invention of the Universal Structural Mill.**

*To the Editor:* I read with considerable interest in *The Iron Age* of December 31 the statement in reference to the universal mill recently installed in the Bethlehem Steel Works, in which you state, without any qualifications, that the mill referred to is the invention of Henry Grey. I regret that it becomes necessary for me, on behalf of the original inventors, my brother (L. D. York) and myself, to give you a few facts in reference to this matter.

L. D. York, when building the beam mill for the Passaic Rolling Mill Company in Paterson, about 1875, conceived the idea of rolling beams and other flange sections universally, but did not at that time do more than give to his employers an outline of his ideas on the subject. There was nothing further done to develop the idea until 1889, when a patent was taken out jointly by my brother and myself, when we proceeded at once to put the idea of the universal rolling of beams, &c., into commercial shape. To accomplish this we considered it necessary to build a small model mill, embodying the vital features now in use in the Luxemburg and Bethlehem mills. With this model mill we gave many practical demonstrations during 1890 and 1891, in the presence of many of the leading iron and steel experts in the United States, who, after seeing the mill roll beams for steel of ordinary quality, gave us a written indorsement of the great beneficial results, both financial and economic, that would be brought about by its adoption by steel works. These original indorsements I have in my possession, also the model mill, as it was originally built and operated.

The next step was the organizing of the Ironton Structural Steel Company to build works, to operate under the York patents, at Duluth. These works were built under my supervision during the years 1892 and 1893. Owing to the financial panic of 1893 we had to suspend our operations. I had almost completed the finishing mill; but, owing to lack of funds, the blooming mill, to roll the blanks, had to be dispensed with until financial conditions improved. At this time, in the fall of 1893, we had a heating furnace, the finishing mill and the power; this constituted the company's entire outfit. To relieve my company from financial stress, I consented to attempt to roll a few sizes of beams, directly from slabs in the finishing mill, without the use of blooming mill blanks. In the meantime we had been negotiating for a blooming mill and were given prices, but they were for cash and we were short of that. The risk I took in attempting to reduce slabs and ingots (for I rolled both) was great, as the mill had been designed for finishing only, but we rolled 15-in. beams 50 ft. long, 40 lb. per foot, without any difficulty as regards the rolling action of the mill. We also rolled a 24-in. section, about 30 ft.

long, and many 12-in. sections of various weights. All told, we rolled about 500 tons, from slabs and ingots. We sent long pieces of all the sizes we rolled to the New York office for exhibition, and many engineers and architects residing in this city indorsed both the shape and finish of the sections.

We discovered when rolling directly from a slab in the finishing mill that the flanges were not quite uniform in width. To correct this we applied for patents for supplementary rolls to be placed in front of the finishing mill, to work on the edges of the flanges. To avoid delay we attached small rolls to the finishing housing, for temporary purposes, but I personally designed and ordered from Pittsburgh a supplementary mill of the same character as that now used in both the Luxemburg and Bethlehem mills.

Some other additions have since been made by Mr. Grey, but we assert without fear of successful contradiction that up to the present time he has not added one feature essential to the success of universal rolling of beams and other flange sections.

Owing to a difference of opinion on financial matters I left the company in 1896. Mr. Grey was employed by me in the fall of 1895, and he stated under oath that he had never seen a universal mill for rolling beams before he saw the one built by me at Duluth. On this mill was given the practical demonstration that induced the Luxemburg engineers to advise their company to adopt universal rolling. The only change that up to this time Mr. Grey had made in the mill was a hydraulic attachment that was stated by my brother and myself in his presence to be of no value and would not operate successfully. This so-called improvement was the Grey first patent on which the American Universal Mill Company was organized for \$5,000,000 capital stock. Mr. Grey designed the Luxemburg mill and superintended its erection, but when it was said to be ready to roll beams it was found necessary by the president of the company to engage L. D. York to go to Luxemburg and take charge of the starting of the so-called Grey mill. On the arrival of L. D. York he found that it would be impossible to operate the mill as Mr. Grey had erected it. It was attempted, to satisfy Mr. Grey, but it failed completely. My brother suggested many changes, which were consented to by Mr. Grey, and the mill was finally made to operate. These changes were referred to by the general manager, Max Meier, in a report given by him to L. D. York, at his request when in Luxemburg. Up to the present time Mr. Grey has simply enlarged the Duluth mill from 30-in. diameter to 40-in. in the Luxemburg plant and 44 in. in the Bethlehem plant. It takes neither skill nor courage to do this, only money.

Before the Luxemburg mill was started, it was considered very necessary by the officials of the company owning the so-called Grey patents to buy the York patents from the owners. Their estimate of the value of those patents can be realized by the company contracting to give about 38 per cent. of its total capital stock of \$5,000,000 for the York patents, that had only a few years to run before they expired. JAMES E. YORK.  
55 PIERREPONT STREET, BROOKLYN, N. Y., January 11, 1909.

#### **The Henry Grey Structural Mill.**

*To the Editor:* In *The Iron Age* of December 31, 1908, you have an article under the head of "Henry Grey and the New Structural Mill." Of course I am glad to receive a public recognition of my work in this connection, but while I feel that it is kind of the writer of this article to say that "It is somewhat exasperating that there is being ignored in all this commendation the original inventor, Henry Grey, an American," the latter is an old Carnegie employee, and is more interested in having his invention introduced here and in feeling in himself that the many new sections now being introduced will be of service to the trade and his country, than in any amount of glory. To Charles M. Schwab belongs the credit for the introduction of this mill to the United States, as without his courage and backing the new structural mill and the new structural shapes would in all likelihood have



been allowed to lie dormant for many years. It is one thing to invent a process or mill and another thing to get a man who can see that it is a good thing and is willing to spend the large sums of money necessary to put it into active operation.

HENRY GREY.

NEWARK, N. J., January 4, 1909.

### The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association, held at the Manufacturers' Club on the evening of January 6, was one of the largest and most interesting in its history. After the transaction of routine business, Walter Wood, chairman of the Committee on Standardization of Pig Iron Specifications, read the following suggested changes in the form of specification as originally presented by a Committee of the American Foundrymen's Association, the portion shown in bold faced type representing the changes proposed.

#### Proposed Standard Specifications for Foundry Pig Iron.

##### ANALYSIS.

It is recommended that all purchases be made by analysis.

##### SAMPLING.

Each carload or its equivalent shall be considered as a unit.

At least one pig shall be selected from each (two) **four** tons of every carload (and so as to fairly represent it), **and so chosen from different parts of the car as to represent as nearly as possible the average quality of the iron.**

Drillings shall be taken so as to fairly represent the fracture surface of each pig. The sample analyzed shall consist of an equal quantity of drillings from each pig, well mixed and ground before analysis.

##### PERCENTAGE OF ELEMENTS.

Opposite each percentage of the different elements a syllable has been affixed so that buyers, by combining these syllables, can form a code word to be used in telegraphing such inquiries as they may desire to make.

##### Carbon.

**Total Carbon not less than 3.25 per cent.**

Silicon*				Sulphur			
Per cent.	Symbol	Per cent.	Symbol	Per cent.	Symbol	Per cent.	Symbol
0.50	Ca	0.50	Ca	0.03	Sa	0.04	Sa
1.00	Ce	1.00	Ce	0.04	Se	0.05	Se
1.50	Cl	1.50	Cl	0.05	Sl	0.06	Sl
2.00	Co	2.00	Co	0.06	So	0.07	So
2.50	Cu	2.50	Cu	0.07	Su	0.08	Su
3.00	Cy	3.00	Cy	0.08	Sy	0.09	Sy
3.50	Ch	0.25	Allowed variation	Maxima gravimetric method			
0.25	Allowed variation						
Phosphorus				Manganese			
Per cent.	Symbol	Per cent.	Symbol	Per cent.	Symbol	Per cent.	Symbol
less than 0.20	Pa	0.25	Pa	0.40	Ma	0.50	Ma
0.30	Pe	0.50	Pe	0.60	Me	0.75	Me
0.60	Pi	0.75	Pi	0.80	Mi	1.00	Mi
0.90	Po	1.00	Po	1.00	Mo	1.25	Mo
1.20	Pu	1.25	Pu	1.20	Mu	1.50	Mu
1.50	Py	1.50	Py	1.60	My	1.75	My
0.15	Allowed variation	0.125	Allowed variation	0.20	Allowed variation	0.125	Allowed variation

Example:—Code Word Cix-pe-ma represents { Sil. Sul. Phos. Mang. 1.50 0.05 0.75 0.50 1.50 0.04 0.60 0.40

\*Whenever standards one half between the standards above are desired, they will be designated by the symbol x, thus

Cix means 1.75 per cent. Silicon, or in trade parlance 1.50 to 2.00 per cent. Silicon.  
Cox means 2.25 per cent. Silicon, or in trade parlance 2.00 to 2.50 per cent. Silicon.

For market quotations a grade shall be assumed, to be known as No. 2, analyzing:

Silicon, 2.50 per cent. and over,  
Sulphur, 0.04 per cent. and under.

While it was intended that iron should be bought by the different analyses only, for market quotations, it is proposed that a grade shall be assumed and known as No. 2 (which will compare in analysis with Standard Middlesbrough No. 3), so that the quotation would represent iron of the same general composition, both in this country and abroad. After discussion it was decided that copies of the committee's report, showing the proposed changes, should be printed and supplied to every member of the association, also furnished to the New England and the Pittsburgh Foundrymen's associations

for distribution among their members, asking for criticisms and suggestions regarding the proposed specifications. The committee was continued indefinitely, so that it could confer with the committees of the other associations and so that a concise and complete report on the matter could be made to the American Foundrymen's Association at its next annual meeting.

The election of officers followed. The Nominating Committee, through its chairman, reported that after careful investigation it unanimously recommended the re-election of the officers who had served the association so satisfactorily the past year. Nominations being declared closed, Stanley G. Flagg, Jr., acted as chairman and conducted the election, the following officers being unanimously chosen:

President, Thomas Devlin, Thomas Devlin Mfg. Company, Philadelphia; vice-president, Alex. E. Outerbridge, Jr., Wm. Sellers & Co., Inc., Philadelphia; treasurer, Josiah Thompson, J. Thompson & Co., Philadelphia; secretary, Howard Evans, J. W. Paxson Company, Philadelphia. Executive Committee—E. E. Brown, E. E. Brown & Co., Philadelphia; Thomas M. Eynon, Eynon-Evans Mfg. Company, Philadelphia; H. L. Haldeman, Pulaski Iron Company, Philadelphia; George C. Davis, 39 South Tenth street, Philadelphia; James S. Stirling, Hilles & Jones Company, Wilmington, Del. Trustees—Thomas Devlin, Josiah Thompson, Howard Evans. Official Chemist, George C. Davis.

President Devlin on again being conducted to the chair thanked the association for again electing him as its presiding officer, feeling honored to be chosen again to preside over an organization that had done so much for the foundry trade, not only in Philadelphia, but throughout the whole country.

The paper for the evening's discussion was on the manufacture of steel castings in small quantities, with a converter of 1000 lb. capacity, by the new Tropenas process, by Arthur Simonson, vice-president of the Tropenas Steel Company, New Castle, Del., which appears elsewhere in this issue. Mr. Simonson presented a paper several years ago before the association on the 2-ton Tropenas converter, which at that time was considered the minimum size for that class of work, but the demand for one of even smaller size has been responsible for the development of the new 1000-lb. converter. At the conclusion of Mr. Simonson's paper both he and Mr. Tropenas were given a unanimous vote of thanks for their presentation of the subject.

### Lake Shipbuilding Contracts.

The shipbuilding companies on the Great Lakes have orders for 16 boats for 1909 delivery. Of these 11 are bulk freighters, 2 are package freighters and 3 are passenger boats. At this time a year ago the same shipyards had contracts for 30 boats, of which 26 were bulk freighters, 2 were package freighters and two were passenger boats. During 1908 the lake shipyards, exclusive of Canadian yards, launched 39 vessels, of which 24 were bulk freighters. These 24 freighters have a carrying capacity of 204,700 tons per trip. The freighters ordered for 1909 have a carrying capacity of 110,300 tons a trip.

In the past seven years vessels having a gross carrying capacity of 33,867,200 tons per annum have been added to the available ore carrying fleet. The new boats to come out this year will increase this tonnage to 35,895,900. Of the orders for boats for 1909 delivery the American Shipbuilding Company has contracts for 6 bulk freighters; the Great Lakes Engineering Works, 4 bulk freighters, 2 package freighters and 1 passenger boat, and the Toledo Shipbuilding Company 1 bulk freighter.

The Westinghouse Machine Company, East Pittsburgh, Pa., is now turning out a new design of gas producer, to make gas from lignite, found in such large quantities in the Western States.

No. 6 furnace of the Tennessee Coal, Iron & Railroad Company at Ensley, Ala., has been put in blast after having been remodeled. The output of this furnace is expected to be the largest in the history of the plant.



## Steel Castings in Small Quantities.\*

### Their Manufacture with a Converter of 1000 Lb. Capacity.

BY ARTHUR SIMONSON, NEW CASTLE, DEL.

The fact that we are now able to procure in a great number of steel foundries castings of good quality has resulted in the past 20 years in a great transformation in construction in general and particularly in mechanical and metallurgical construction. The heavy and massive pieces are made in the open hearth furnace, and the medium and small pieces are made in the converter. The open hearth has played its important part in the development of the now extensive steel foundry business, but it is above all the small converter which has been the principal factor, on account of its more easy adaptation to all the details of miscellaneous manufacturing, its elasticity of production and its cost. The converters generally used in the steel foundries have a charge capacity varying from 1 to 3 tons. The 2-ton converter, which is convenient for the manufacture of pieces of all weights from 1 lb. to 10 tons has been the most generally employed.

The question has often been asked if it were not possible to bring out a type of converter which, instead of treating 2 tons, would be able to treat charges of 1000 lb. only, and employing high pressure blowers instead of the too costly blowing engines, with the power apparatus and accessories reduced and proportioned to the smaller charge. For a pneumatic refining of a small charge to work in good condition it is necessary that the heat developed by the oxidation of the elements of the iron raise the temperature of the bath rapidly to a high point, and that the temperature go on increasing until the end of the operation. In the treatment of a small charge the loss of heat, by comparison with the mass, is very high, and the least error or the smallest negligence on the part of the operator leads to an irregular and tumultuous blow, which produces a steel of bad quality, or too cold to be handled for the ordinary purposes of a steel foundry.

#### What Is Required of the Small Converter.

For a small converter to be able to respond to the needs of the small metallurgical industry it is necessary:

1. That the steel obtained at the end of the blow be at a high temperature; that it be very fluid, and that it retain that fluidity long enough to be distributed in small ladles and cast without haste or precipitation into the molds.
2. That the mild steel obtained be of an entirely regular quality and entirely deoxidized to produce sound pieces, when the molds have been properly prepared.
3. That the mechanical results obtained meet the conditions demanded by the governments and railroad companies.
4. That the management of the blows be easy and such as can be learned in a few weeks by any intelligent workman.
5. That the expense of the installation be not too high.

The numerous experiments made under the direction and control of A. Tropenas have permitted the realization of this type of small converter, which solves in a complete manner the problem of the manufacture of steel castings in small quantities by the pneumatic process. The dispositions employed and the principles of refining on which the process is based realize exactly the desiderata which have been formulated above.

It is not intended to supersede the 2-ton converter which is now used, when the amount of castings averages 100 tons per month or more, but it may be an interesting complement for an iron or a brass foundry, or for a construction firm which does not wish to remain dependent on the large steel foundries.

\* From a paper read before the Philadelphia Foundrymen's Association, January 6, 1909. Mr. Simonson is general manager of the Tropenas Steel Company.

#### Apparatus Employed in An Installation.

The machines and apparatus necessary to put the process in operation are the following:

1. A cupola of special design to melt the iron which is to be refined in the converter. A special low pressure blower to serve this cupola.
2. A special converter in which is charged the iron previously melted in the cupola. A special high pressure blower for the converter.
3. A small crucible furnace in which is melted the final addition used to reduce the oxidation of the metallic bath.
4. The necessary motors for driving the cupola and converter blowers and the accessory apparatus.
5. The cranes for handling the casting ladles and molds.
6. The materials and tools generally employed in all foundries, flasks, drying stoves, annealing furnaces, molding material, &c.

[Here follows a description of the above outfit.—ED.]

To drive the two blowers for the cupola and converter about 40 hp. is required. Iron foundries already existing, which are studying the question of installing a complementary steel foundry, are usually recommended to consider that the steel foundry ought to be separated entirely from the iron foundry, in order to avoid the mixture of the pig iron and scrap of the latter with those of the steel foundry. The same precautions have to be taken in the case of the smaller new converter. The lining being acid, no sulphur and no phosphorus is removed by the operation. The ordinary foundry pig iron, which contains much sulphur and phosphorus, introduced by inadvertence, even in small quantities, in the material used for the manufacture of steel, produces castings of bad quality or completely useless.

#### The Irons Employed.

The irons used are the low phosphorus or Bessemer irons, of which the analysis varies generally within the limits following:

	Per cent.
Carbon .....	3.80 to 4.50
Manganese .....	0.50 to 2.00
Silicon .....	1.80 to 3.00
Sulphur .....	Maximum 0.05
Phosphorus .....	Maximum 0.06

The carbon is not an element of prime importance and may vary between limits greater than those indicated above. The manganese may also vary between limits a little more than those of the table above, but this may result in the quick wearing of the lining. The proportion of pig iron entering into the charge for the cupola should be regulated by the quantity of scrap, gates and heads resulting from preceding operations which it is desired to utilize. As a general rule, it is good practice to use all or the greater part of the scrap, gates and heads which are produced in the steel foundry. The greater the proportion of scrap used the greater must be the percentage of silicon in the pig iron used.

#### Operation of the Converter.

The mixture of pig iron and scrap is melted in the cupola, then tapped into a ladle at one time. The ladle is lifted by means of a crane to the level of the mouth of the converter, placed in the charging position, and its contents, which constitute the charge, are poured at one time into the converter. The converter is then placed in the blowing position, at the same time that the compressed air produced by the high pressure blower is admitted into the wind box, and from there into the tuyeres by opening the admission valve. The operation is then pursued up to the point of the complete transformation of the pig iron into steel.

It lasts about 15 to 20 min., according to the nature of the iron treated. The conduct of the operations is exceedingly simple and easy and all intelligent workmen can become in a short time good operators. The reducing final additions previously melted in the crucible furnace are made, and the steel is then ready to be poured into the molds.

For the casting of small pieces the steel is carried in small ladles of 60 to 80 lb. by two men. The extreme-

ly fluid and quiet steel is then taken to the molding floors and cast without haste or precipitation. When the foundry force has had some weeks of practice it is possible to cast the entire charge in 20 min. in small pieces without making any appreciable skulls. Adding the time of blowing and the time of casting, it will be seen that the complete operation takes about 35 to 40 min. Counting 5 min. for charging the converter, it is possible to make a complete operation or to produce about 1000 lb. of steel every 45 min.; that is to say, in a working day of 10 hr. one can make and cast 12 operations of 1000 lb. each without pressing, and produce in the neighborhood of 6 tons of steel, ready to be cast into the molds.

Cost of the Steel in the Liquid State.

Taking as a basis the output given above—that is to say, a production of 6 tons of liquid steel for a working day of 10 hr.—and supposing that a small steel foundry has been organized to cast twice a week, we shall obtain the cost of the steel in the ladles as detailed below, and, moreover, verified by experience. We must note that the reduction in weight due to melting in the cupola and refining in the converter is from 15 to 18 per cent. In making the following calculations we have used 18 per cent., so as to be on the high side; but the total loss, which varies according to the analysis of the pig iron and different circumstances, is less on the average. This, therefore, makes necessary in our calculations a total of 15,600 lb. of the mixture of pig iron and scrap for a net production of 6 tons of liquid steel taken as the basis of the cost of production. The mixture melted in the cupola is considered as two-thirds pig iron and one-third scrap.

10,400 lb. pig iron, at \$21 per ton.....	\$100.10
5200 lb. steel scrap, at \$15 per ton.....	41.25
2030 lb. coke for cupola, at \$4 per ton.....	4.10
620 lb. limestone, at \$2.50 per ton.....	.80
One man and helper for cupola.....	4.00
7½ hp. for cupola blower, at 5 cents per kw. hr.....	2.80
1100 lb. coke for converter and crucible.....	1.80
30 hp., 3 hr., for H. P. blower, 5 cents per kw. hr.....	3.40
One man and helper on converter.....	4.50
793 lb. ferrosilicon, at \$28.....	11.10
112 lb. ferromanganese, at \$45.....	2.52
Aluminum.....	.70
Linings for cupola and converter.....	5.00
Crucibles.....	2.50
Power for elevator and tilting converter.....	1.10
General expenses of manufacturing.....	25.00
Total.....	\$210.67

Thus the price of the liquid steel ready to be cast into the mold is in the neighborhood of 1.60 cents per pound. This price does not include the general fixed charges of the enterprise nor the interest on the capital invested.

Tests of Cast Steels Made in the Tropenas Baby Converter.

Numbers and description of test pieces.	Analysis.					Length between points. Inches.	Diameter of test piece. Inches.	Tensile str. per square inch.	Elong. Per cent.	Reduction of area. Per cent.
	C.	Mn.	Si	S	P					
Cast No. 3 NA.....	0.23	0.77	0.177	0.035	0.055	7.874	0.7186	79,230	16.5	Not taken.
Cast No. 7 NA.....	0.255	0.861	0.20	0.052	0.0446	7.874	0.7186	64,862	18.0	Not taken.
Cast No. 9 NA.....	0.27	0.68	0.22	0.0219	0.0424	7.874	0.7186	67,707	22.5	Not taken.
Cast No. 15 NA.....	0.37	...	...	...	...	3.937	0.7186	72,827	9.0	20.6 piped.
No. 17, cast in sand.....	0.30	...	...	...	...	7.874	0.7186	62,584	17.0	26.0
No. 17, chilled.....	0.30	...	...	...	...	3.937	0.7186	61,384	14.0	35.2
Cast No. 19 NA.....	0.23	...	...	...	...	7.874	0.7186	64,714	19.5	41.6
Cast No. 19 NA.....	0.23	...	...	...	...	7.874	0.7186	58,327	20.0	Not taken.
Cast No. 19 QR.....	0.23	...	...	...	...	7.874	0.7186	68,555	14.0	Not taken.
Cast No. 24 NA.....	0.30	...	...	...	...	7.874	0.7186	69,682	18.0	Not taken.
Cast No. 26 NA.....	0.30	...	...	...	...	7.874	0.7186	69,417	16.0	Not taken.

The test pieces marked NA are not annealed. That marked QR (quenched and reannealed) was quenched in water, reheated and cooled in ashes.

Quality of the Steel.

The steel coming out of the converter very hot and fluid it is possible to cast pieces of very small size and extremely light. If the molds are well prepared and the sand of proper quality the castings produced are clean and have a good exterior appearance. The greater proportion of the castings is made of soft steel, which is almost exclusively specified by the constructing engineers. The test pieces tested by different customers at the foundry, where two of these small converters are working, have given the following results on the usual soft grade of machine castings:

Numbers of test pieces.	Tensile strength per sq. inch.	Elongation in 3.937 in. of area.	Reduction of area.	Remarks.
A 17.....	81,520	19.40	43.70	Fibrous.
A 19.....	82,830	17.09	39.20	Granular, part fibrous.
A 20.....	65,455	18.49	47.20	Fibrous.
A 21.....	64,436	16.95	33.60	Fibrous.
A 23.....	62,713	17.48	38.50	Granular, part fibrous.
A 25.....	65,294	20.14	44.20	Fibrous.
B 110.....	71,359	21.08	43.60	Fibrous granular.
B 112.....	75,572	20.41	39.14	Fibrous granular.
B 115.....	74,617	22.17	40.26	Fibrous granular.
B 117.....	72,972	23.45	35.61	Fibrous granular.
B 120.....	77,733	19.90	34.80	Fibrous granular.
B 121.....	77,019	19.85	36.56	Fibrous granular.

These cast steels forge like mild rolled steel and without taking more than ordinary precautions. They weld also as well in a forge fire by taking the same precautions ordinarily used in similar cases. This feature permits the casting of complicated pieces in parts which are afterward welded together. Compared with an open hearth furnace of small capacity this furnace has the advantage of being much more elastic and accommodates itself to intermittent use. When the converter is stopped all consumption of power and fuel ceases, but in the case of the open hearth one is obliged to keep up the fire after stopping, as at night or on Sunday. The steel produced is hotter and more fluid than that produced in the open hearth, and consequently produces less skulls.

The steel made in this small converter is of the same quality as that obtained from converters of higher capacity. The mechanical results do not show any difference. The blows are easy to manage. The periods are sharp and clearly defined, and the signs which indicate the finish of the reaction are particularly visible. The possibility of manufacturing steel by the pneumatic process in small quantities, with an inexpensive plant and at a small cost, when a small production is required, may be of real interest and may help many constructing firms or foundries.

Discussion.

In answer to questions, Mr. Simonson said that the shell of the 1000-lb. converter is 6 or 7 ft. high, and that the manhole provided in the side is simply to make it easier to pass in bricks in lining the converter, and for use in case the lining should give way near the tuyeres. A. Tropenas, whose name has been connected with the 2-ton converter, was introduced, and in answer to questions by A. H. Jameson of the Branford Malleable Iron Fittings Company, Stanley G. Flagg, Jr., and others, said:

The process is quite recent. We have now only three converters running, but we expect to have another running soon at our new plant at New Castle, Del. I should say that without any repair about 30 or 40 heats can be run. By

repairing the lining 100 heats can be made with the same lining if of special sand composition, which is very cheap. If made of good silica bricks, it would last much longer, but would cost more on account of the cost of silica bricks. The pressure of air is about 3 lb. to the square inch. The depth of the metal is not exactly the same as in the 2-ton vessel, but is proportionate to the surface and diameter, and the size of the converter inside. We do not use the same size blower, but the same pressure in both cases. It may vary from 3 to 5 lb. per square inch. One of the differences from the old process is that we use less silicon in the small converter. We can take the iron which is regularly used in the open hearth furnace with, say, 1.60 to 2 per cent. silicon. Thus your total silicon would be much less than 2 per cent. at the beginning of the blow.



Mr. Devlin: What would be the probable cost of a baby furnace, that is of everything connected with it, except the power?

Mr. Tropenas: I should say that about \$5000 or \$6000 would purchase all the operating apparatus necessary for such a plant. This problem of making steel castings in small quantities by the quick pneumatic process has been tried by several engineers, but it has not made any progress up to now, because the processes advocated were not reliable. My experience of the last two years permits me to say that I have found a practical solution of the problem. We can produce now a perfectly regular quality of steel in a very hot and fluid state, which can be cast easily from small ladles without haste and give good and sound castings.

Mr. McCarter: If we could make a heat on Saturday covering, say, 2000 lb., that is all we want. Can that be done economically?

Mr. Tropenas: The cost submitted to you was figured out for a case where the converter was working twice a week with 10 to 12 blows each time.

Mr. McCarter: If you would run these two or three blows at the end of the week would that materially reduce the life of the lining?

Mr. Tropenas: No; it makes no difference.

Mr. McCarter: We operate a machine shop and use about 2000 lb. of steel castings every week. It is almost impossible to get them. They hold up the work. The work depends on promises which are never fulfilled.

Mr. Tropenas: In that case a 1000-lb. converter would give you your castings right away the same day.

Mr. McCarter: We bought in the last five months 200 tons of steel castings at least. We have on our floor in the shop to-day a lot of work for a blast furnace that requires possibly 100 castings, which average 15 to 50 lb. We have had to send back at least half of the order because of defects, and some of these castings have not been received yet from the steel foundries. Of course, they have not all been placed with those having converters. A great many are with open hearth foundries.

Mr. Tropenas: The question of defects is a different proposition. We can make good steel, but to obtain good castings with good steel it requires good molds.

Mr. Jameson: Why is it that for the smaller vessel you require lower silicon in the bath?

Mr. Tropenas: Because we want the first period of the blow to be as short as possible. We are treating a small mass of metal so we want to rush the blow as much as we can and lose as little temperature as possible.

Mr. Jameson: In that case you depend for your initial temperature on hot iron?

Mr. Tropenas: We also add at a given period of the operation manganese or silicon in the proper form to obtain an increase of temperature in the bath, providing the element added will give a solid oxide, not an oxide gas.

Prof. Bradley Stoughton: Might I ask if the patents on adding that material at a certain period of the blow have run out, or whether you have to pay any royalty to anybody for their use?

Mr. Tropenas: We have not to pay royalty to anybody. In previous processes the addition of silicon has been made to raise the temperature of the bath. In that case that addition was made after the end of the blow and an afterblow was necessary to finish the operation. The result was that the quality of the steel was very erratic. The manufacture of steel castings requiring a great regularity in the steel, these processes have been abandoned.

S. S. Knight, Chester Steel Castings Company: I would like to ask Mr. Tropenas what extent of loss he has in this 1000-lb. converter?

Mr. Tropenas: I take the loss in the cupola to be between 5 and 7 per cent. We have to get the metal very hot, and the total loss varies between 15 and 18 per cent., so the loss in the converter should be 11 to 13 per cent.

Mr. Evans: Supposing an iron foundry already established would like to put in one of these converters, could they melt the iron in their regular cupola?

Mr. Tropenas: An ordinary cupola would do, providing the inside could be made according to special instructions. When you have to treat the metal in a very small converter like this one, you want to minimize the oxidation of the elements of the iron while it is melted in the cupola. The converter and cupola alongside of each other would take about 15 to 18 ft. x 6 ft.

Mr. Evans: At what temperature do you pour the steel?

Mr. Tropenas: It is about 1625 to 1650 degrees C.

Professor Stoughton: Mr. Tropenas, as is well known, is a solver of some of the most puzzling difficulties in steel castings, particularly the matter of small castings. I am very happy that he has solved this one. I want to ask why they do not use a converter in two pieces, particularly such a small converter. You would think it would be more difficult to line a converter all in one piece unless you open the side. I would ask also what is the form of the inside of this converter. Another thing: The blast pressure being the same and the height of the converter being less, you would think that the spitting would be excessive. The spitting is believed to be the great cause of loss in these converters.

Mr. Tropenas: The inside of the converter is conical, but the sides are not so steep as in the 2-ton converter. Now in regard to the spitting: If the length of the converter is one of the factors which interferes with the spitting during the blow, there is another factor which is much more important to consider, and that is the reaction of the carbon on the oxidized metallic bath at a certain period of the operation which takes place during the boil. We find in practice that these small converters do not spit more than the large ones, and when I built my first baby converter I made it much longer than the one we are now using. We found it was unnecessary to make it so long. The oxidation is not beyond ordinary limits, and the spitting is very little. In fact, I have seen the converter blowing all day, 10 or 12 operations, practically without any spitting, even during the period of boiling.

Professor Stoughton: About taking the bottom off. That is an American invention, and especially interesting. That is to say, if it be of benefit to some converters, you would think it would be a benefit in this converter to have the bottom removable.

Mr. Tropenas: I do not see why the bottom of the converter should not be removable. But I have had no experience with removable bottom converters. I would say that it is the practice in Europe to make the small converter in one piece, and we do not find very much trouble in making the lining, because instead of lining with brick we generally ram up a kind of composition.

### The Resignation of James M. Swank.

The current issue of the *Bulletin* of the American Iron and Steel Association, published at Philadelphia, contains a letter from James M. Swank addressed to Joseph Wharton, the association's president, resigning the offices of secretary and general manager. It has been known for some time that owing to the condition of his health Mr. Swank desired to be relieved of the responsibilities he has so long carried, but that knowledge of the imminence of his retirement does not diminish the great regret his letter will bring to all his friends. In writing to Mr. Wharton he says:

"I greatly regret that I am compelled to write you this letter, but there are some duties to ourselves and our friends that cannot be indefinitely postponed. I have long wished to be relieved of the really arduous and exacting duties that have rested upon me in this office for many years. At the end of 36 years of continuous and undivided service as the executive head of this association, first as secretary, then as general manager, and during the last 22 years as secretary and general manager, I can no longer withhold the request that the members of the association will select at an early day a capable and worthy successor to me in the twofold position which I now hold in this office. In what manner this successor should be selected is not now clear to me, but I hope that the selection will not be long delayed. In the meantime, I will continue as usual to care for all the interests of the association."

Whatever of restoration a release from managerial and editorial duties may bring, it is to be hoped Mr. Swank will find to the fullest extent. The record of his 36 years in the service of the American iron trade is one of arduous work, marked always by rare energy and talent. It would be hard indeed to measure the debt the iron manufacturers of the country owe to his devoted and well directed effort.

Mr. Swank's letter to Mr. Wharton was dated December 31, 1908. In an accompanying paragraph in the *Bulletin* he says: "Owing to illness since the above letter was written Mr. Wharton's reply has not been received, at the time this number goes to press, but we know his views perfectly. Mr. Wharton will ask to be relieved of his duties as president of the association at the time my successor is appointed." Mr. Wharton's death, coming so soon after the above was written, adds a fateful touch to this announcement of his intention.

By the terms of the will of the late James Corrigan, Cleveland, Ohio, a large share of his estate is to be held in trust. The trustees and executors named in the will are James W. Corrigan, his son; Price McKinney, his partner, and J. E. Ferris, treasurer of Corrigan, McKinney & Co. A number of large bequests were made to relatives and friends.



## OBITUARY.

JOSEPH WHARTON.

Joseph Wharton, who had long been prominent in the American iron trade and had also won distinction in the manufacture of spelter and nickel, died in Philadelphia January 11, aged nearly 83 years. He was born in Philadelphia March 3, 1826. He inherited a very small amount of money as a foundation upon which to embark in business. As he was of somewhat delicate health, he was not given a collegiate education, but made up for this by persistent study, becoming well equipped for the varied duties he was afterward called upon to perform. His first connection with business was with a Philadelphia dry goods house, at the age of 19 years. In the course of a year he had become the head bookkeeper, and at 21 embarked in business with his brother, Rodman, who was then a manufacturer of white lead and needed more capital. Only a few years were spent in this enterprise, when an opportunity was presented to sell it out to a competitor. Mr. Wharton next went to South Bethlehem, Pa., and took charge of the affairs of the Lehigh Zinc Company, continuing until the panic of 1857 threatened the company with financial disaster. He then leased the company's property and operated it at a fine profit. When the lease terminated he became the manager again and turned his attention from zinc oxide to the manufacture of metallic zinc or spelter. This was a new venture and under Mr. Wharton's management it became thoroughly successful. It was necessary for him to import expert workmen from Belgium for the purpose of engaging in this enterprise. About this time he had his attention directed to the inadequate supply of the nickel required by the United States Government for the coinage of the nickel alloy cents then decided upon. He purchased in 1864 the abandoned Gap nickel mine in Lancaster County, Pa., and obtaining possession of an abandoned refining plant at Camden, N. J., revived the nickel industry. For many years he was the only producer of nickel in this country. He was the first person in the world to produce malleable nickel.

His first connection with the iron trade was with the Bethlehem Iron Company, now the Bethlehem Steel Company, in the 60's. Beginning with small holdings of stock, he was called upon from time to time to extend financial support to the company, and ultimately his ownership of the stock became much greater than the holdings of any other person. Although he was never president of the company, yet as director and the leading stockholder he had much to do in outlining its policy. It was through his efforts that the company engaged in the manufacture of armor plate.

For the last few years Mr. Wharton has been dis-

tinguished as the largest individual producer of pig iron in America, having the ownership of four blast furnaces in New Jersey. His first venture in this line was in a furnace at Hackettstown, which he traded for a short railroad line near Dover, N. J., which greatly expanded now serves the Wharton furnaces with ores from the local mines of the same ownership. He then bought a small furnace at Port Oram, now Wharton, N. J., which he rebuilt, and finding his venture successful he erected a much larger one in 1900-1901, adding another in 1903. He also purchased the Andover Furnace, at Phillipsburg, N. J. For the purpose of operating these furnaces he acquired magnetite mines in New Jersey, hematite mines in New York, and coal mines in Fayette and Indiana counties, Pa., and in West Virginia. In all his work Mr. Wharton brought to bear not only a tremendous amount of energy, but intelligent knowledge of what it was necessary to do to secure best results. In the preparation of the ores and the operation of the blast furnaces his methods were of the most approved character.



JOSEPH WHARTON.

Mr. Wharton was a man of scholastic attainments, a vigorous writer and a forcible speaker. Deeply interested in education, he gave liberally of his large means toward the support of educational institutions. He was one of the founders of Swarthmore College, and was president of its Board of Directors for many years. With Samuel Willets of Philadelphia he established its scientific laboratory, while he alone established the Chair of History and Political Economy in the same institution. Another of Mr. Wharton's large benefactions toward educational advancement was the founding of the Wharton School of Finance and Political Economy in the University of Pennsylvania. Toward the establishment of this chair he gave \$500,000. He was for many years president of the American Iron and Steel Association, and

always took an especially active part in protective tariff movements. He leaves a married daughter.

KENTON CHICKERING, vice-president of the Oil Well Supply Company, Pittsburgh, died at Oil City, Pa., December 8, 1908. He was vice-president of the company from its formation, prior to which he was connected with Eaton & Cole and the Eaton, Cole & Burnham Company in a continuous service of 39 years. The company has issued a testimonial showing its appreciation of his able, faithful and untiring services and his manly and upright character.

J. H. DAY, president of the J. H. Day Company, Cincinnati, manufacturer of bakers' and confectioners' machinery, sifting, mixing and paint manufacturers' machinery, died January 11, aged 58 years. He had built up one of the largest establishments of its kind in the world, the plant covering approximately 3 acres and including a foundry, in which some of the largest machine

tool castings are made. Mr. Day was born in Jefferson County, Ohio, and was entirely selfmade. He leaves no family.

GEO. A. JOHNSON, vice-president of the Sligo Iron Stove Company, St. Louis, died January 2 after a brief illness. He was a native of St. Louis and had been connected with the Sligo Company for 30 years. For the past few years he had made his home at Alton, Ill.

DANIEL S. LOUGHRAN, president of the Kings County Iron Foundry, Brooklyn, N. Y., died suddenly January 7, aged 56 years.

CHARLES R. JONES, treasurer of the Fraser & Jones Company, Syracuse, N. Y., one of the oldest saddlery hardware manufacturing companies in central New York, died January 8, aged 47 years.

WILLIAM A. ROBBINS, general superintendent of the DeLaney Forge & Iron Company, Buffalo, N. Y., died suddenly January 3. He leaves a widow and one son.

CHARLES H. BESLY, head of the firm of Charles H. Besly & Co., Chicago, died December 31, aged 56 years. He was born in Milwaukee and had been a resident of Chicago for 45 years. He organized the business of Charles H. Besly & Co., in 1876, and that which has been carried on at Beloit, Wis., under the same firm name, in 1886. He was a member of the Union League Club and the Chamber of Commerce of Chicago and of the Engineers' Club and the Machinery Club of New York.

ALEXANDER THOMAS, secretary of the Crucible Steel Company of America, died January 8, aged 59 years, at a hospital in Hamburg, Germany. He went to Germany last August in the interest of the company. For more than 30 years Mr. Thomas was identified with the crucible steel industry, having been connected with the Park Steel Company prior to its amalgamation with the Crucible Steel Company of America. Two years ago he visited Japan and did much to introduce American steel in the Orient. He leaves a widow and one son.

## PERSONAL.

Charles A. Moore, Jr., vice-president of Manning, Maxwell & Moore, Inc., has been elected a director of the Carnegie Trust Company of New York.

Geo. H. Baush, sales manager of Hill, Clarke & Co., Inc., Philadelphia, Pa., has resigned his position to take effect February 1, and has accepted a similar position with the Fay Machine Tool Company, Philadelphia.

At a meeting of the Board of Directors of the American Institute of Mining Engineers, Prof. Richard Beck of Freiberg, Saxony, and Dr. E. Schroedter of the Verein deutscher Eisenhuettenleute, Düsseldorf, Germany, were elected honorary members. James M. Swank, general manager of the American Iron and Steel Association, Philadelphia, was elected honorary associate.

Nimo Fabris of Rome, Italy, representing Alfred H. Schutte, left January 5 on the steamer Hamburg to resume his duties at Rome after a three months' stay in this country, where he visited the more important machinery centers.

President Walter F. Seman of the Frontier Iron Works, Buffalo, N. Y., entertained the directors, superintendents and foremen of the different departments to celebrate the fifth anniversary of his election to the presidency of the organization of motor manufacturers. When Mr. Seman assumed the presidency of the company it was engaged in general jobbing work; but, due to his taking notice of a more promising field, special designs were worked out for gas engines in one piece castings up to and including six cylinders. These castings are made for various gas engine manufacturers who do not operate

Samuel B. Sheldon, general superintendent of the Lackawanna Steel Company, Buffalo, N. Y., resigned January 9, to accept the position of general superintendent of the Saucon Works of the Bethlehem Steel Company. George F. Downs, heretofore assistant general superintendent of the Lackawanna Company, has been appointed general superintendent in his place, and

Thomas H. Mathias has been advanced to the position vacated by Mr. Downs. Mr. Sheldon had been with the Lackawanna Company over five years, having gone to that company from the Joliet plant of the Illinois Steel Company at the time that Geo. L. Reis became general manager of the Lackawanna Company. Mr. Downs went to Buffalo from the South Chicago plant of the Illinois Steel Company four years ago, at the time that C. H. McCullough, Jr., took the general management of the company and of the works.

Augustus Brown, for the past six years superintendent of the Monarch Emery & Corundum Wheel Company, Camden, N. J., is now associated with the American Emery Wheel Works, Providence, R. I., as assistant superintendent.

H. C. Thomas, who has been connected with the Coosa Pipe & Foundry Company at Gadsden, Ala., for a number of years, has been appointed superintendent of the concern, vice W. R. Moore, resigned.

## Pennsylvania Rail Specifications Revised.

Formal announcement is made by the Pennsylvania Railroad Company of the acceptance by the manufacturers of the order for 135,500 tons of steel rails for 1909 delivery, under a revision of its specifications of February 4, 1908. The revised specifications are dated December 10, 1908. But one departure from the specifications of last year is noticed, apart from the paragraphs dealing with tests and inspection, which, as is well known, were under serious discussion by the railroad and the steel companies prior to the placing of the Pennsylvania order last month. This change consists in providing two classifications in the chemical composition of open hearth rails as follows:

### Open hearth steel rails: CLASSIFICATION A.

	Lower Limit.	Desired Composition.	Upper Limit.
Carbon .....	0.70	0.75	0.83
Silicon .....	0.05	0.12	0.20
Manganese .....	.....	.....	0.80
Phosphorus .....	.....	.....	0.03

### Open hearth steel rails: CLASSIFICATION B.

Carbon .....	0.62	0.70	0.75
Silicon .....	0.05	0.12	0.20
Manganese .....	.....	.....	0.80
Phosphorus .....	.....	.....	0.04

In the specifications of February 4, 1908 (*The Iron Age*, April 16, 1908, page 1244), there was but one analysis for open hearth rail steel. It corresponded exactly with Classification A as above, except that the upper limit for carbon was 0.80 per cent. instead of 0.83 per cent.

Coming now to the alterations made under the head of "Tests and Inspection," which are the vital provisions of the amended specifications, we give below the paragraphs as they now stand, indicating in brackets any different reading in the specifications of February 4, 1908:

14. One drop test shall be made on pieces of rail not less than 4 ft. and not more than 6 ft. long from each heat of steel. These test pieces shall be cut from the rail bar next to either end of the top rail, as selected by the inspector.

The test piece shall be placed head upwards on solid supports, 5 in. radius, 3 ft. between centers, and both 85-lb. and 100-lb. sections shall be subjected to an impact test from a weight of 2000 lb. falling 15 ft.

The deflection for No. 1 classification rails must not exceed that indicated by a middle ordinate of 2 in. in 3 ft. for 100-lb. section, and 2¼ in. for 85-lb. section.

The temperature of the test pieces shall be between 60 and 120 degrees F.

The test pieces shall be tested to destruction.

(a) If a test piece breaks without showing physical defects, two more pieces from the same heat shall be tested, and if neither of these pieces fails, all rails of the heat will be accepted as No. 1 or No. 2 classification, according as the deflection is less or more, respectively, than the prescribed limit. Separate records shall be kept of these tests. If either of the second test pieces fails, all the rails from the heat will be rejected.

[Original (a): If a test piece breaks without showing physical defect all rails made from that heat shall be rejected absolutely.]

(b) If, however, the test piece broken under test "a" shows physical defect, the top rail from each ingot of that heat shall be rejected; and

(c) A second test shall then be made of a test piece selected by the inspector from the top end of any second rail of the same heat. If this second test piece breaks, the remainder of the rails of the heat shall also be rejected. If this second piece



does not break, the remainder of the rails of the heat will be accepted as either No. 1 and No. 2 classification, according as the deflection is less or more, respectively, than the prescribed limit.

(d) If the test pieces (test "a"), do not break, but when nicked and tested to destruction show pipe, the top rail from each ingot will be accepted as "Special" rails, either as No. 1 or No. 2, and a separate record made of the test. The remainder of the rails of the heat will be accepted as either No. 1 or No. 2 classification, according as the deflection is less or more, respectively, than the prescribed limit.

[Original (d): If the test piece, test "a," does not break, but when tested to destruction shows pipe, the top rail from each ingot shall be rejected. The remainder of the rails of the heat will be accepted as either No. 1 or No. 2 classification, according as the deflection is less or more, respectively, than the prescribed limit.]

[Original (e): If the test piece, test "a," does not break, and when tested to destruction does not show pipe, the rails of the heat will be accepted as either No. 1 or No. 2 classification, according as the deflection under test "a" is less or more, respectively, than the prescribed limit.]

15. The drop testing machine shall have a tup of 2000 lb. weight, the striking face of which shall have a radius of not more than 5 in. The anvil block of the drop testing machine shall weigh at least 20,000 lb., and the supports shall be part of, or firmly secured to, the anvil. The foundations for the anvil block shall be such as will meet the approval of the railroad company.

16. Rails which, by reason of surface imperfections, are not classed as No. 1 rails, will be accepted as No. 2 rails; but No. 2 rails, which contain imperfections in such number or of such character as will, in the judgment of the inspector, render them unfit for recognized No. 2 uses, will not be accepted for shipment.

[Original 16: No rails shall be accepted which contain any physical defects that impair their strength.]

17. Rails improperly drilled or straightened, or from which the burrs have not been properly removed, shall be rejected, but may be accepted after being properly finished.

18. No. 2 rails to the extent of 5 per cent. of the whole order will be received. All rails accepted as No. 2 rails must have the ends painted white, and all top rails accepted as "Special" rails under Paragraph 14 (d) must have the ends painted blue. All classes of rails must be kept separate from each other, and be shipped in separate cars.

[Original 18 omits reference to "Special" rails.]

19. Rails will be accepted and billed according to actual weights.

20. All rails must be loaded in the presence of the inspector.

21. For Bessemer steel, the makers shall furnish the inspectors with the carbon determination of each heat, and, also, two complete analyses which shall represent the average steel of each day's work, before the rails are shipped. For open hearth steel, the makers shall furnish the inspectors with the complete chemical analyses for each melt. These analyses shall be checked from time to time by the railroad company's chemist, and, on request of the inspector, the makers shall furnish a portion of the test ingot for check analyses.

[Original 21 omits italicized portions of above.]

22. Inspectors representing the railroad company shall have free entry to the works of the makers at all times when the contract is being filled, and shall have reasonable facilities afforded them by the makers to satisfy them that the finished material is furnished in accordance with these specifications. All tests and inspection shall be made at the place of manufacture, prior to shipment.

## Trade Publications.

**Transformers.**—Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. Circular No. 1157. Deals with the type S single-phase distributing transformers, which are made in 15 sizes ranging in capacity from 1 to 50 kw. Illustrations of the transformers and their parts, with complete descriptions, are given.

**Reamers.**—Cleveland Twist Drill Company, Cleveland, Ohio. Circular. Pertains to Peerless high speed reamers of the hand, core, chucking, shell core and shell chucking types. These can be furnished either solid or expansion, and the Peerless expansion reamers are claimed to be the only expanding reamers with as many cutting edges as a solid reamer.

**Magnetic Separators.**—Dings Electro-Magnetic Separator Company, Milwaukee, Wis. Bulletin No. 18. Devoted to the type M M magnetic separator, which is designed especially for treating ores and mineral products having constituents of magnetic susceptibility. It is capable of making five separations by one operation, the separations consisting of non-magnetic heads and four grades of magnetite, ranging from the strongest to the weakest.

**Machinery and Supplies.**—Mussens, Ltd., Montreal, Canada, with branches in Toronto, Cobalt, Winnipeg and Vancouver. Wall calendar of exceptionally large size. Has separate leaves for each month, each leaf bearing illustrations of a different kind relating to the merchandise handled.

**Electric Motors.**—Northern Electrical Mfg. Company, Madison, Wis. Bulletin No. 59. Concerns the advantages of individual motor drives for general machinery and gives a full

illustrated description of the type S motors made by the company, which are particularly adaptable for reversible variable speed drives. This new type of motor was described in *The Iron Age* December 17, 1908.

## Lower American Steel Duties Good for Canada.

TORONTO, January 9, 1909.—On this side of the line the iron and steel tariff hearings at Washington have been followed with much interest by all who have faith in Canada's resources for steel making. That faith is strongest in regions in which iron ore deposits occur or are supposed to lie hidden. Though Canada continues to import from Newfoundland and the Lake Superior mines, much the greater part of the ore consumed in her blast furnaces, it is confidently and generally expected that in good time the country will be found to have all the high grade ore it needs for the development of great steel industries. Men whose opinion is entitled to respect say that we have not yet seen the best of the contents of even existing mines. It is from the upper levels of these that the bulk of the ore now produced is being taken. Last autumn the diamond drill was operated at a point on the Atikokan Range that had not been deeply tested before. At a depth of 100 ft. an ore body 25 ft. in thickness was penetrated. This, according to a statement imputed to the expert by whom the ore was examined, is held to be solid hematite of a rich grade. It is said, too, that the quantity of ore in this deposit is very great. If there is no exaggeration in the reports given of this boring, the Atikokan Range is hardly less important for the excellence of a great part of its ore than for the magnitude of its deposits. It was thought to contain only magnetite ore. In the Michipicoten District the ore of the Helen Mine improved after the surface strata were passed through, and from a limonite the ore changed into a very good hematite. The ore of the Moose Mountain mine, north of Sudbury, has been much heard of recently, its quality being represented as far superior to what it had been understood to be. In quantity it was generally known to be quite remarkable. But the discovered deposits of Ontario ore are inconsiderable in amount by comparison with the estimates of what are yet to be discovered. A broad mineral belt extending from the Minnesota boundary to the Quebec boundary sweeps across Ontario to the north of the Great Lakes. In this the geologists have led us to expect the presence of iron fields. Here and there in the tract hematite ore has been stumbled upon.

John W. Gates' proposal that the United States steel duties be cut down excited no less interest in Canada than Mr. Carnegie's suggestion that protection be withdrawn from the United States steel industry. There is a widespread notion in this country that the opening of the United States market to foreign steel would give a great impulse to steel making in Canada. It would, it is thought, give the degree of incentive that is needed to bring the iron prospectors' work to fruition. Railroads traversing the mineral areas of Ontario are no longer lacking. The Ontario & Rainy River section of the Canadian Northwest extends from Port Arthur to the Manitoba boundary of Ontario, and runs through at least three iron fields. The Algoma Central goes a considerable distance northward from Sault Ste. Marie. The Grand Trunk Pacific's branch line runs more than 200 miles nearly due north from Fort William. The Canadian Pacific and the Canadian Northern now have lines running from Toronto to Sudbury. The Canadian Northern's line in question extends north of Sudbury 25 miles to the Hulton mines and sends a branch to Key Inlet on Georgian Bay, whence ore may be forwarded by water. The Ontario Government's road runs from North Bay to Cochrane, the proposed point of junction with the National Transcontinental. Thus there are now the means of transportation. If American capital can be enlisted in the iron resources of Ontario, the development of these resources will follow. To enlist American capital a material lowering of the United States duty on steel would, it is considered, be effective. Hence Mr. Carnegie's and Mr. Gates' views are much approved here, the latter's particularly so because Mr. Gates is the leading spirit in the Moose Mountain Iron Company. C. A. C. J.



## NEWS OF THE WORKS.

### Iron and Steel.

The sheet and tin mills of the Follansbee Brothers Company, Follansbee, W. Va., are running to full capacity after a brief shutdown over the holidays for necessary repairs. This plant has not been entirely idle at any time for several years, and has quite a large number of orders ahead for sheets and tin plate for delivery in the next three months.

The Universal Rolling Mill Company, Washington, Pa., which operates the Waynesburg Forge, Sheet and Tin Mills, has moved the sheet department to Bridgeville, Pa., and expects to place it in operation about the middle of February.

Embree Furnace, Embreeville, Tenn., was blown in December 15, after having been out for 30 days for repairs.

Saxton Furnace of Joseph E. Thropp, at Saxton, Pa., was blown out December 7 for extensive improvements.

The Keystone Steel Company, Warren, Pa., whose mills for the manufacture of diamond, ribbed and checkered pattern Kesco wrought steel floor plates are at Wilmington, Del., is now rolling the diamond pattern steel plates for the four torpedo boats under construction at the Cramp Shipyards. The company has also closed contract for the deck plates for the four steel barges to be used by the Government for Panama Canal work. These barges are also being built by the Wm. Cramp & Sons Ship & Engine Building Company.

### General Machinery.

A new automobile garage and machine shop, 60 x 132 ft., will be erected by W. E. Dinnenn at Cheyenne, Wyo., the construction of which will be begun at an early date.

The Brazil Factory Promoting Club, Brazil, Ind., has let the contract for a brick building 80 x 200 ft., to cost \$10,000, to be occupied by the Wood Turret Machine Company, which is to move its plant from Terre Haute. The building is to be ready for occupancy March 10.

J. B. Winslett, city secretary, Dallas, Texas, will receive bids until January 15 for a duplex air compressor with compound steam and two-stage air cylinder to run either condensing or noncondensing. The compressor is to have a capacity of 700 cu. ft. of free air per minute.

McCoy & Brandt, manufacturers' agents, 619 Ferguson Building, Pittsburgh, are having a 5-ton Alfred Box electric traveling crane installed in the storage yard of the Superior Steel Company, Carnegie, near Pittsburgh. It is equipped with a magnet for handling billets. The firm reports that it is having much success with the line of Allen-Bradley electric controllers, for which it is selling agent, and that some of the largest manufacturers, such as the Crucible Steel Company of America, Jones & Laughlin Steel Company, Mesta Machine Company, Union Steel Casting Company and American Sheet & Tin Plate Company, have installed them in connection with their crane equipment and for operating machine tool motors, where they are giving satisfaction on account of the nondestructible resistance with which they are equipped.

The Thomas Carlin's Sons Company, N. S., Pittsburgh, builder of shears, grinding pans and contractors' equipment, has contracts calling for a No. 38 belted shear to cut 1½-in. material for Eastern shipment, a No. 3 belted shear to cut 4-in. square and one derrick and hoist for a manufacturing plant in the Pittsburgh District, miscellaneous work for the Pittsburgh filtration plant and a 7-ft. grinding pan for W. & H. Walker, Pittsburgh.

The Geo. A. Hogg Iron & Steel Foundry Company, Pittsburgh, has recently completed a 16-in. motor driven roll lathe for the Donora Works of the American Steel & Wire Company, and has the following other orders: Two No. 2½ belted shears to cut 1½-in. square for C. Strasburg's Sons, Ft. Wayne, Ind.; one No. 4½ to cut 2½-in. square for the Central Track Supply Company, Springfield, Ohio; one No. 2½ to cut 1½-in. square for the Gordon Iron Company, Chicago Heights, Ill., and a No. 2½ motor driven shear to cut 1½-in. square for the Crosby Company, Buffalo, N. Y.

The Screw Cutting Company of America, Philadelphia, Pa., which is erecting a new two-story building 60 x 82 ft., has not yet determined what new machinery it will require. At the present time it is having 25 special screw machines built that will enable it to cut any size of screw up to 4 in. in diameter, any length, pitch or thread.

Otto Hedtke is erecting a two-story brick machine shop at East Ferry street and Humboldt parkway, Buffalo, N. Y., for the manufacture and repair of automobile parts, for which a small equipment of lathes and drills will be required.

The Reliable Novelty & Electric Company, Binghamton, N. Y., has been organized for the manufacture of a new electric motor under the patents of Ward Decker. The company has been operating a small plant at Lanesboro, Pa., which will be moved to Binghamton as soon as the company is fully organized.

### Power Plant Equipment.

Orbison & O'Keefe, hydraulic engineers, Appleton, Wis., are preparing plans and specifications for a hydro-electric power

plant to be installed at Iron Mountain, Mich., by the Iron Mountain Electric Light & Power Company. The new plant will be located at Lower Twin Falls and is expected to develop over 500 hp. It is stated that work on this project will be carried forward as rapidly as possible.

N. C. Davison & Co., Keenan Building, Pittsburgh, have sold a 35-hp. Bessemer gas engine to W. E. Minor, Mapleton, Pa.; 15-hp. gas engine, Andrew Brethauer, Northside, Pittsburgh; 15-hp. gas engine, George F. Kober Estate, Pittsburgh; 5-ton ice plant and a 25-hp. gas engine, Sheridan Dairy Company, Sheridan, Pa.

The Board of Trustees of the Indiana Reformatory at Jeffersonville, Ind., has authorized the installation of another pump for the water system with a capacity of 1100 gal. a minute. The board expects to have the new foundry in operation January 15, just two months from the date of its destruction by fire.

It is understood that no contract was awarded December 15 for the 2,000,000-gal. pumping engine for Hobart, Okla., and that new bids will be secured.

The Hopcroft Producer Gas Company has been incorporated at Rochester, N. Y., with a capital stock of \$24,000, to deal in gas producers and engines and machinery. Ernest D. Hopcroft, Charles A. Bruff and Wilfred B. Tuxill are among the directors.

### Foundries.

Plans are under consideration for a large extension to the plant of the Frontier Iron Works, Buffalo, N. Y., regarding which definite announcement will be made at a later date.

The plant of the Coosa Pipe & Foundry Company, at Gadsden, Ala., has been put in operation after a shutdown for the annual inventory.

An extension to the plant of the Bessemer Soil Pipe Company, at Bessemer, Ala., is now under way. It is planned to double the capacity formerly operated.

### Bridges and Buildings.

The Wm. B. Scaffe & Sons Company, Pittsburgh, Pa., has received a contract from the Maryland Coal Company for a steel tippie and trestle to be erected at St. Michael, near Johnstown, Pa. The tippie will be one of the largest ever constructed in that part of the State.

Few additional tools will be required by the recently organized Memphis Steel Construction Company, Memphis, Tenn., for equipping its new plant. The company has purchased the Odium-Taylor Boiler Works in North Memphis, where it will do all kinds of structural steel work. It is not the intention to erect additional buildings at the present time.

### Fires.

The machine shops of Jacob Bittner and the T. W. Curley Mfg. Company at Meyersdale, Pa., were burned January 3, the combined loss being about \$15,000.

The boiler shop of Fairer & Son, Columbia, Pa., was damaged \$5000 by fire January 8.

The fertilizer plant of Darling & Co., Chicago, Ill., was burned January 6, the loss being about \$100,000.

The plant of the Memphis Machine Company, Memphis, Tenn., was damaged \$25,000 by fire January 7.

### Hardware.

The Usona Wire & Iron Company, St. Louis, Mo., formerly located at 1909-1911 Locust street, has been compelled by the growth of its business to secure more room and increase its facilities, and to this end has moved its plant to 202-204 South Seventeenth street.

The Maurer Mfg. Company, Freeport, Ill., has been incorporated, with a capital stock of \$1000, to manufacture chicken coops. The officers of the company are Geo. E. Maurer, president; N. J. Snyder, vice-president, and Frank S. Mogle, secretary and treasurer.

The Central Indiana Fence & Wire Company has been organized at Kokomo, Ind., and incorporated, with \$10,000 capital stock, to manufacture woven wire fence. The incorporators are Elmer E. Scott, Elias J. Scott and W. Allison.

The American Standard Machinery Company, Muskegon, Mich., organized with a capital of \$30,000, will soon begin the manufacture of a line of specialties which will include a coat locking device for hotels and several other articles of like character. For the present the company will arrange for the manufacture of its product with local factories.

The Lovell Mfg. Company, Erie, Pa., will erect a two-story factory building and a one-story detached power house building in the spring.

The American Sterilizer Company, Erie, Pa., is having plans prepared for a two-story brick and steel factory building, 60 x 180 ft., which the company contemplates erecting during the next few months.

### Miscellaneous.

The Maxwell-Briscoe Motor Company, Newcastle, Ind., is erecting an addition to its large plant. The new building will be of brick and steel, 150 x 720 ft.

The Central Mfg. Company, Connersville, Ind., which for years has made wooden automobile bodies, will erect an additional building for the manufacture of metal bodies.

## The Iron and Metal Trades

There is a feeling of some disappointment, even among those who refused to join in the chorus of exuberant predictions of last November. There is no snap in the demand, and what requirements there are come out in a hesitating way. With cheap money and with the whole country bare of finished goods, better buying was expected. The railroads are the principal laggards, while apparently the general trade is acting conservatively in view of the coming tariff revision. The conviction seems to be gaining ground that a feature of the latter will be free raw materials, among them Iron Ore, Coal, Coke and possibly Scrap, with corresponding reductions in semifinished and finished Iron and Steel, the rate of reduction tapering off as the more highly finished products are reached.

New business is light all along the line. There is the nearest approach to a normal demand in the Wire products, which is regarded as significant, since they enter into such a variety of channels.

There are some slight spots of weakness in the Pig Iron markets. The Southern makers have practically given up the plan of asking prices for second quarter delivery higher than those for first quarter shipments. Some resales of Southern Pig Iron have also cropped up in various quarters, but investigation shows that the quantities involved cannot be of much moment.

Pipe makers are still responsible for the largest inquiries in the market and at least one large block is under negotiation, after having been practically closed. There is a disposition to buy among Open Hearth melters in eastern and in western Pennsylvania.

The Rail trade continues very quiet. Among the new inquiries which are up for consideration are 22,000 tons for the International & Great Northern and 8000 tons for the Great Northern.

Eastern Pennsylvania Plate and Structural mills are running at a better rate than they have been for a long time, and there is the prospect of some good business in Ship Plates for the Atlantic Coast yards. The Structural shops are gathering in a good aggregate tonnage in small jobs, calling for a few hundred to 1500 tons. None of the larger work which has been pending has been closed. It is expected that the new power house for the New York Edison Company, which will call for 12,000 tons, will soon be figured on.

Old Material is weaker in Chicago and in the East. The deadlock between the Steel makers and the dealers over the market in heavy Melting Scrap was lessened through the purchases by one mill of lots aggregating 7000 tons for none of which over \$17, delivered in buyers' yard, eastern Pennsylvania, was paid.

The Metal markets are quiet throughout, and some sellers of Copper admit their disappointment. There was a sharp drop in Tin amounting to about 1c. per pound during the week, the Metal touching 27.90c. during the decline.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

Jan. 13, Jan. 6, Dec. 9, Jan. 8,

1909. 1909. 1908. 1908.

### PIG IRON, Per Gross Ton:

Foundry No. 2, Standard, Philadelphia	\$17.25	\$17.25	\$17.25	\$18.25
Foundry No. 2, Southern, Cincinnati	16.25	16.25	16.25	16.25
Foundry No. 2, Local, Chicago	17.35*	17.35*	17.35*	18.35*
Basic, delivered Eastern Pa.	16.75	16.75	16.75	17.25
Basic, Valley Furnace	15.50	15.50	15.50	17.00
Bessemer, Pittsburgh	17.40	17.40	17.40	18.90
Gray Forge, Pittsburgh	15.40	15.40	15.15	17.40
Lake Superior Charcoal, Chicago	19.50	19.50	19.15	22.50

### BILLETS, &c., Per Gross Ton:

Steel Billets, Pittsburgh	25.00	25.00	25.00	28.00
Forging Billets, Pittsburgh	27.00	27.00	27.00	30.00
Open Hearth Billets, Phila.	26.20	26.20	26.20	30.00
Wire Rods, Pittsburgh	33.00	33.00	33.00	34.00
Steel Rails, Heavy, at mill	28.00	28.00	28.00	28.00

### OLD MATERIAL, Per Gross Ton:

Steel Rails, Melting, Chicago	14.50	14.50	15.50	12.00
Steel Rails, Melting, Phila.	17.00	17.50	16.75	11.50
Iron Rails, Chicago	18.75	19.50	19.50	15.00
Iron Rails, Philadelphia	21.25	21.25	21.00	16.50
Car Wheels, Chicago	16.00	16.00	16.00	19.00
Car Wheels, Philadelphia	16.00	16.00	16.00	19.00
Heavy Steel Scrap, Pittsburgh	16.75	16.75	16.50	....
Heavy Steel Scrap, Chicago	14.00	14.00	15.25	10.75
Heavy Steel Scrap, Philadelphia	17.00	17.50	16.75	11.50

### FINISHED IRON AND STEEL,

Per Pound:

	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.55	1.52	1.50	1.75
Common Iron Bars, Chicago	1.50	1.50	1.50	1.75
Common Iron Bars, Pittsburgh	1.50	1.50	1.50	1.60
Steel Bars, Tidewater, New York	1.56	1.56	1.56	1.76
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.70
Beams, Tidewater, New York	1.76	1.76	1.76	1.86
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater, New York	1.76	1.76	1.76	1.86
Angles, Pittsburgh	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh	1.45	1.45	1.45	1.70
Skelp, Sheared Steel, Pittsburgh	1.50	1.50	1.50	1.80

### SHEETS, NAILS AND WIRE,

Per Pound:

	Cents.	Cents.	Cents.	Cents.
Sheets, Black, No. 28, Pittsburgh	2.50	2.50	2.50	2.50
Wire Nails, Pittsburgh	1.95	1.95	1.95	2.05
Cut Nails, Pittsburgh	1.75	1.75	1.75	2.00
Barb Wire, Galv., Pittsburgh	2.40	2.40	2.40	2.50

### METALS, Per Pound:

	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	14.75	14.75	14.50	13.87½
Electrolytic Copper, New York	14.25	14.25	14.12½	13.75
Spelter, New York	5.20	5.20	5.15	4.40
Spelter, St. Louis	5.05	5.05	5.00	4.27½
Lead, New York	4.20	4.20	4.27½	3.65
Lead, St. Louis	4.10	4.10	4.15	3.60
Tin, New York	28.75	28.85	29.10	26.75
Antimony, Hallett, New York	8.00	8.12½	8.12½	8.75
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	\$3.89	\$3.89	\$3.89	\$3.89

\* These quotations have been changed from prices at furnace to delivered prices at foundries. The 35c. is for switching charges.

## Chicago

FISHER BUILDING, January 13, 1909.—(By Telegraph.)

Thus far in the new year but little improvement is apparent in any branch of the Iron and Steel trade. Business in all Finished lines is moving slowly, and the tonnage of new orders is light. The continued delay of the railroads in placing orders for material, which it is confidently expected must be sooner or later purchased to meet existing and prospective needs, is undoubtedly one of the leading influences operating against the hoped for upturn in the market activities. A summary of the new business booked by the mills last week shows few transactions of importance. To the Rail tonnage heretofore reported as under consideration has been added a total of 30,000 tons from Western lines, and orders have been placed for 2600 tons of Angle Bars and 8000 kegs of Bolts. The increased number of inquiries for highway and traction line bridges foreshadows the placing of numerous small orders for such work with the fabricating shops. A total of 2500 tons of Structural Material was involved in three construction contracts recently let, to which is added 483 tons of railroad bridge material. The Bettendorf Axle Company is taking bids on about 1500 tons of fabricated material to be used in the construction of a proposed new foundry building. Plates, Merchant Pipe and Boiler Tubes are extremely quiet but a slightly better demand for Sheets is noted. Under the liberal railroad offerings of last week Old Material prices broke 50 cents or more a ton on most grades. The bullish sentiment which dominated the market at the close of the year has disap-



peared, and dealers are not now disposed to discount the future far in advance.

**Pig Iron.**—The market continues dull, with nothing to indicate that consumers are at all interested in Pig Iron either for prompt or future delivery. In fact, there is increasing evidence that the melt is not large enough to take care of Iron now due on present contracts. Requests for holding up shipments are growing more numerous, and unless there is a material increase soon in the consumption the purchases for second quarter requirements will be light. Sales generally have been small, and include but a few lots of important size. Among the latter is one of 2000 tons of No. 2 Southern Foundry, taken by a local foundry interest. A prominent radiator company has closed for a lot of 12,000 tons, which has been under consideration for some time, with a Buffalo furnace, the latter delivering the Iron to the company's plant in that city. An inquiry for 1000 tons is reported, but the trade at large is comprised of a very modest aggregate of small orders. No definite change has taken place in values, except that neither Northern nor Southern producers now actively seeking second quarter business are making any pretense of asking an advance for such deliveries. It may, therefore, be said that both Northern and Southern prices are now squarely on a basis of \$13 for No. 2 Foundry, Birmingham, for the first and second quarters. While this price is at present being held with a good deal of firmness, the conditions supporting it are not as strong as could be wished. In order to establish an equality in the delivered quotations of Northern and Southern Iron 35c. is added to the local furnace price heretofore quoted to allow for switching charges on f.o.b. plant delivery. The inside quotations now represent the actual market, since there is practically no upward spread. The following quotations are for January, February and March delivery, f.o.b. Chicago:

Lake Superior Charcoal.....	\$19.50 to \$20.00
Northern Coke Foundry, No. 1.....	17.85 to 18.35
Northern Coke Foundry, No. 2.....	17.35 to 17.85
Northern Coke Foundry, No. 3.....	16.85 to 17.35
Northern Scotch, No. 1.....	18.35 to 18.85
Southern Coke, No. 1.....	17.85 to 18.35
Southern Coke, No. 2.....	17.35 to 17.85
Southern Coke, No. 3.....	16.85 to 17.35
Southern Coke, No. 4.....	16.35 to 16.85
Southern Coke, No. 1 Soft.....	17.85 to 18.35
Southern Coke, No. 2 Soft.....	17.35 to 17.85
Southern Gray Forge.....	15.85 to 16.35
Southern Mottled.....	15.60 to 16.10
Malleable Bessemer.....	17.00 to 17.50
Standard Bessemer.....	17.90 to 18.40
Jackson Co. and Kentucky Silvery, 9%.....	19.90 to 20.40
Jackson Co. and Kentucky Silvery, 8%.....	20.90 to 21.40
Jackson Co. and Kentucky Silvery, 10%.....	22.90 to 23.40

(By Mail.)

The movement in Forging Billets reflects the general quietness prevailing in the shops of machinery builders. Orders are scattered, and for small amounts, with here and there a few contracts of unimportant size for forward deliveries. We are advised that prices are being maintained quite uniformly at the recognized schedule of \$28.50, base, Chicago. Supported by the continuance of a nearly normal average demand for Wire products, Wire Rod specifications are being offered in fair volume, and some new contracts are being entered at regular prices, which we quote as follows: Bessemer, \$33; Basic, \$34; Chain, \$33, all at Pittsburgh.

**Rails and Track Supplies.**—The railroads contributed but little in the way of orders to the general volume of business entered by the mills in the past week. The only recent additions of noteworthy size reported from this source are 2600 tons of Angle Bars and 8000 kegs of Bolts, which were secured by the Illinois Steel Company. Among the inquiries in the market involving considerable tonnage are those of the International & Great Northern Railroad for 22,000 tons of 85-lb. Rails, and 8000 tons of Standard Section Rails from the Great Northern Railroad; whether the latter are to be Bessemer or Open Hearth has not been definitely decided. Besides these there are a number of inquiries for smaller lots ranging from 100 up to 1000 tons or more from various electric traction lines. There is a notable increase in new projects of this kind in the West, where such enterprises are commanding a large share of attention because of the rapid development of water powers by means of which the necessary current for operation is cheaply generated. The demand for Light Rails, which has been fairly active for some time, has fallen off, and the keenness of competition for what business there is moving operates adversely to the firm maintenance of prices, with the result that conditions in this respect are unsatisfactory. Concessions of \$1 to \$3 a ton from regular quotations are made in competition with Re-rolling mills. We quote as follows: Angle Bars, accompanying Rail orders, 1909 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., \$26; 20-lb., \$27; 16-lb., \$28; 12-lb., \$29. Standard Sections, Bessemer, \$28; Open Hearth, \$30, on lots of 500 tons and over; on smaller lots \$2 a ton extra.

**Structural Material.**—The most encouraging feature in

the present demand for Structural Material is the increasing number of small inquiries and orders coming into the market. Among these are quite a number of bridges for highways and electric roads from points in the West, where improvements of this kind are apparently receiving more attention than elsewhere. While such orders are individually small, the prospects are that they will soon constitute a collective tonnage of considerable importance. The general contract for the erection of James E. Clow & Son's new foundry plant at Coshocton, Ohio, which will require about 500 tons of Structural Material, has been awarded to Luyster & Lowes, Dayton, Ohio, but the order for fabrication has not been given out. A new warehouse for the Crane Company's San Francisco branch calls for about 500 tons; no award for the 2500 tons previously reported as under consideration for the Chicago warehouse of this company has as yet been made. The Wisconsin Bridge Company will fabricate 483 tons of bridge material for the Chicago, Milwaukee & St. Paul Railroad. Formal closure of the 3844 tons for the Hart, Schaffner & Marx Building, Chicago, definitely places this work with the American Bridge Company. A new factory building, to be erected by the Roberts, Johnson, Rand Shoe Company, St. Louis, calls for 1300 tons, the general contract for which has been awarded to James Stewart; and 700 tons for a highway bridge for the city of Missoula, Mont., is included in the general contract for construction taken by Burrill Brothers. Both the Southern Pacific and Santa Fe railroads are furnishing fairly liberal specifications on existing contracts with the American Bridge Company. Shipments of fabricated Steel for the construction of the People's Gas Light & Coke Company's office building and the approaches of the Northwestern Depot are beginning to come in, and the work of erection will be carried forward as rapidly as the weather will permit. The low prices at which some of the recent jobs have been taken furnish no encouragement for hopes of an immediate widening of the margins of profit of fabricated work, which, if figured on a basis of regular cost for plain material, would be entirely wiped out. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., 1/4-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The principal tonnage coming to the mills is comprised of specifications from car builders against the contracts placed the latter part of last year. New orders, which are scarce and light, represent mainly the immediate wants of consumers and the stock filling requirements of jobbers. The latter interests are carrying no more material in their warehouses than is actually required, and on account of the prompt deliveries obtainable from the mills there is no present necessity for increasing stocks. Price conditions are not wholly satisfactory, since it is still possible to obtain concessions of \$1 to \$2 a ton, especially on the narrow sizes. We quote mill shipments as follows: Tank Plates, 1/4-in. and heavier, wider than 6 1/4 and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for 1/4-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, 1/4-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Some fairly good orders have been received this week from the jobbing trade, which seems to indicate a disposition to stock up a little more liberally in anticipation of a growing demand. This movement, however, is not as yet at all pronounced, nor is the general demand measurably greater than it has been in recent weeks. At the same time the outlook is not unpromising. All things considered, there is a fair regularity in prices, which is disturbed only by slight concessions from a few unimportant sources. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—That the consumption of Steel Bars has suffered no decline is evident from the undiminished flow of specifications to the mills. The volume of such orders for the first 10 days of the year has held well up to the level estab-



lished for December. Only a moderate amount of new business in Iron Bars is being entered, and buyers are exacting in their demands for the prompt shipment of orders. Although it is possible that buyers could be induced to place forward contracts at a concession from the ruling rate, mills are presenting a strong front in the maintenance of prices, both in Iron and Steel Bars. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extras, Steel Bar card, Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Last week's record was somewhat improved by the development of a little spurt of buying, which, however, was in nowise significant of any material change in the situation. The extra volume of business was doubtless due to the placing of orders held over until after the taking of inventories was completed. The market on the whole is quiet, a condition that always prevails to a greater or less degree during the winter months. The following mill discounts are quoted: Black Pipe,  $\frac{3}{4}$  to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized,  $\frac{3}{4}$  to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe,  $\frac{3}{4}$  to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The requirements of the railroads for Locomotive Tubes seem to have been pretty well supplied, and but few orders are now being placed. The movement of Merchant Tubes is extremely sluggish, with no signs of immediate improvement. Mill quotations for future delivery, on the base sizes, are as follows:  $2\frac{3}{4}$  to  $4\frac{1}{4}$  in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2;  $2\frac{1}{2}$  in. and smaller, and lengths over 18 ft., and  $2\frac{1}{2}$  in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to $1\frac{1}{2}$ in.....	35	35	35
$1\frac{3}{4}$ to $2\frac{1}{4}$ in.....	50	35	35
$2\frac{1}{2}$ in.....	52½	35	35
$2\frac{3}{4}$ to 5 in.....	60	47½	47½
6 in. and larger.....	50	35	..

**Merchant Steel.**—Neither manufacturers nor jobbers are showing any haste in forwarding specifications, and the volume of orders entered in the past 10 days is rather below the average for the same period in the previous month. It is believed, however, that this lack of interest is only temporary, and that as soon as the business of the new year is fairly under way, the demand will take an upward turn. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to  $1\frac{1}{2}$  x  $\frac{1}{2}$  in., 1.73c., base, Steel card; Iron Finish,  $1\frac{1}{2}$  x  $\frac{1}{2}$  in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires,  $\frac{3}{4}$  to 1 in., 2.08c., and  $1\frac{1}{4}$  in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel,  $7\frac{1}{4}$ c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent. off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

**Cast Iron Pipe.**—The letting of 1500 tons by the city of Duluth resulted in the award of the contract to the United States Cast Iron Pipe & Foundry Company. No purchase has been made by the city of Minneapolis of the 1700 tons on which a letting was advertised for last week, action being indefinitely postponed. Aside from these lots, there are no contracts of importance in sight, and the general business in small orders is only moderately active. Prices are firmer and quotations are advanced \$1 a ton. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., \$28; 6 to 12 in., \$27; 16 in. and up, \$25, with \$1 extra for Gas Pipe.

**Metals.**—The market has developed a firmer tone, which, although not reflected in an actual advance of local selling prices, has stimulated buying. No large lots are changing hands, but sales of Casting Copper in lots of 5 to 10 tons up to carloads for March delivery are more numerous. The large consumers are generally covered by purchases made in November, designed to meet requirements for 90 days. General buying, however, is of a hand to mouth character. Quotations are as follows: Casting Copper, 14½c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ¾c. higher; Pig Tin, car lots, 31½c.; small lots, 34½c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corroding, 4.70c. to 4.80c., for 50-ton lots; in car lots, 2½c. per 100 lb. higher; Spelter, 5.10c. to 5.25c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is \$7, f.o.b. La Salle; in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, Crucible Shapes, 14c. to 14¼c.; Copper Bottoms, 12¼c.; Copper Clips, 12¼c.; Red Brass, 12¾c.; Yellow Brass, 10c.; Light Brass, 7½c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

**Old Material.**—The market is decidedly weak, and prices have declined 50c. or more a ton nearly all along the line. The bidding for the railroad tonnage offered within the past few days was not at all spirited, and would probably have been less so if weather conditions permitted prompt deliveries of the material offered. As it is, dealers are counting on delay in collection and delivery by the railroads, expecting that shipments of material comprised in the list just closed will not reach the market for 30 or 60 days, by which time it is hoped that conditions will have improved. The largest list reported—that of the Great Northern Railroad, including 10,600 tons in all, with 5000 tons of Old Iron Rails—will not be closed until the 15th. Among the prices realized by the roads on last week's sales were the following: Old Iron Rails, \$19; Re-rolling Steel Rails, \$16.05; Short Steel Rails, \$14.75; Frogs, Switches and Guards, \$14.25, all gross tons. Couplers and Knuckles, \$13.25; Iron Axles, \$20.50; No. 1 Cast, \$13.25; No. 1 Wrought, \$14.15. Turnings, \$9.25; Cast Borings, \$7.60, Pipe and Flues, \$11.10, all net tons. The following prices are per gross ton, f.o.b. Chicago:

Old Iron Rails .....	\$18.75 to \$19.25
Old Steel Rails, re-rolling.....	16.00 to 16.50
Old Steel Rails, less than 3 ft.....	14.50 to 15.00
Relaying Rails, standard sections, subject to inspection.....	22.50 to 23.50
Old Car Wheels .....	16.00 to 16.50
Heavy Melting Steel Scrap.....	14.00 to 14.50
Frogs, Switches and Guards, cut apart.....	14.00 to 14.50
Mixed Steel .....	12.00 to 12.50

The following quotations are per net ton:

Iron Fish Plates.....	\$16.50 to \$17.00
Iron Car Axles.....	20.00 to 20.50
Steel Car Axles.....	18.00 to 18.50
No. 1 Railroad Wrought.....	14.00 to 14.50
No. 2 Railroad Wrought.....	13.00 to 13.50
Springs, Knuckles and Couplers.....	13.75 to 14.25
Locomotive Tires, smooth.....	14.50 to 15.00
No. 1 Dealers' Forge.....	11.00 to 11.50
Mixed Bushelling .....	9.00 to 9.50
Iron Axle Turnings.....	8.75 to 9.25
Soft Steel Axle Turnings.....	8.75 to 9.25
Machine Shop Turnings.....	8.75 to 9.25
Cast Borings .....	7.25 to 7.75
Mixed Borings, &c.....	7.25 to 7.75
No. 1 Mill.....	9.00 to 9.50
No. 2 Mill.....	8.00 to 8.50
No. 1 Rollers, cut to Sheets and Rings.....	10.00 to 10.50
No. 1 Cast Scrap.....	13.00 to 13.50
Stove Plate and Light Cast Scrap.....	12.00 to 12.50
Railroad Malleable .....	13.00 to 13.50
Agricultural Malleable .....	11.25 to 11.75
Pipes and Flues .....	10.50 to 11.00

## Buffalo.

BUFFALO, N. Y., January 12, 1909.

**Pig Iron.**—The market continues extremely quiet, and only a very limited amount of new business developing. Specifications on contracts are still held up to some extent, awaiting the completion of inventories. Furnacemen accept the situation philosophically, confident that the demand will become more active and that more Iron will be moving within a few weeks. Prices remain unchanged, as follows, f.o.b. Buffalo:

No. 1 X Foundry.....	\$16.50 to \$17.00
No. 2 X Foundry.....	16.00 to 16.50
No. 2 Plain.....	15.50 to 16.00
No. 3 Foundry.....	15.50 to 16.00
Gray Forge.....	15.50 to 15.75
Basic .....	16.00 to 16.50
Malleable Bessemer.....	17.00 to 17.50
Charcoal .....	20.75 to 21.25

**Old Material.**—The market is lifeless, there being an entire lack of demand from consumers, and dealers not inclined to force new business; consequently, there is but little movement except for material on unfilled contracts. Prices have fallen off a little in some lines, but are largely nominal, as follows, per gross ton, f.o.b. Buffalo:

Heavy Melting Steel Scrap.....	\$15.00 to \$15.50
Low Phosphorus Steel Scrap.....	21.00 to 21.50
No. 1 Railroad Wrought.....	16.25 to 16.75
No. 1 Railroad and Machinery Cast Scrap .....	15.00 to 15.50
Old Steel Axles.....	18.50 to 19.50
Old Iron Axles.....	22.00 to 22.75
Old Car Wheels.....	16.00 to 16.50
Railroad Malleable.....	14.00 to 14.50
Boiler Plate.....	12.50 to 13.00
Locomotive Grate Bars.....	12.00 to 12.25
Pipe .....	12.00 to 12.25
Wrought Iron and Soft Steel Turnings .....	9.50 to 10.00
Clean Cast Iron Borings.....	9.00 to 9.50
No. 1 Bushelling Scrap.....	14.00 to 14.50

**Finished Iron and Steel.**—Inquiries and orders continue light for Bars, Shapes, &c., but prospects for new business in the near future appear promising. One of the largest of the local forging companies is in the market for its requirements for Billets, and is asking quotations covering a contract for one year and five year periods. The New York Central is in the market for 1000 box cars of 60,000-lb. capacity, requiring considerable tonnages in Bars, Shapes and Axles. In Structural Material considerable new business is in sight. Bids for the Steel for the new Odd Fellows' Building, Buffalo, a small tonnage, will be received this week. The Steel for an additional story on the Union Realty Building, Syracuse, has been secured by the Jones & Laugh-

lin Steel Company, and bids will be called for on the 15th inst. for the Structural Material, about 700 tons, required for the Central City Cold Storage Company, Syracuse.

The Buffalo offices of the Lackawanna Steel Company, formerly maintained in the Ellicott Square Building, have been removed to the second floor of the Fidelity Building, Rooms 202 to 212, where very commodious quarters have been secured and attractively fitted up. The change includes the suite of offices occupied by Vice-President and General Manager C. H. McCullough, Jr., and the offices of H. L. Stevens, sales agent.

## Philadelphia.

PHILADELPHIA, PA., January 12, 1909.

While there has been a trifle more activity in some lines, developments in the local Iron and Steel markets during the week have been rather slow. The trade has not yet recovered from the usual first of the year dullness, and it will probably require at least another week before business will be transacted in the usual routine. Railroad buying still continues to drag and disappointment is expressed at the lack of business from that class of buyers. Considerable tonnage is pending in the Iron market, but there seems to be no urgency either on the part of buyer or seller to close business under consideration. In some lines of finished Iron and Steel the demand shows a slight betterment, but in others there is little change. The trade takes a very hopeful view of the situation, and it is believed that a steady improvement will be noted in the near future, although uncertainty regarding the tariff is exerting an influence in some directions and will probably result in business being to some extent held in abeyance.

**Pig Iron.**—While there is a slight improvement to be noted in the aggregate of business done during the week, buying is still light, and transactions have been largely confined to the foundry grades. The situation continues decidedly strong, sellers showing no disposition to urge business, owing to the fact that furnaces in this territory are pretty well sold up for the next few months, and while there is a little more disposition on the part of some few to take a moderate tonnage for the second half, but little business of that character has been transacted. There has been a fair amount of buying in Foundry Iron for prompt shipment at \$17.25 to \$17.50 for No. 2 X. An occasional order for several hundred tons is reported, and one lot of 1000 tons was taken. The Cast Iron Pipe makers are still in the market. Several would place orders for large blocks, if prices could be shaded, but sellers are very firm on low grade Iron. One Pipe interest is in the market for 20,000 tons, while several others would take more moderate quantities. While there is an apparent weakness in the price of Southern Iron, it has been traced to offerings by speculators, who still have Iron on hand bought when the market was off last year, and on which the delivery date has about expired. One lot of 500 tons of No. 2 Iron was disposed of in this territory for spot delivery on the basis of \$12.50, Birmingham. No great tonnage is expected to come on the market, inasmuch as the delivery date on a number of such purchases still has some months to run. Southern producers themselves are making no concessions on established prices for new business, \$13 to \$13.50, Birmingham, for No. 2 Foundry, being strictly adhered to. Little business has been done in the Virginia grades, sellers being out of the market in a number of instances, and the tonnage taken has been at full prices. Forge Iron has been quiet, but some light inquiry has developed and prices are strong, with a slight advancing tendency. Several Steel plants are still in the market for Basic Iron for second quarter delivery, but no sales have recently been made. A large producer sold some 10,000 tons of Low Phosphorus Iron the past month. It was made up of a number of small lots, several of which have already been reported, going largely to Steel casting plants. Both standard and misfit Iron was included, the prices ranging from \$20.50 to \$21.50. Prices continue to be maintained on all grades, and for delivery in buyers' yards, eastern Pennsylvania and near-by territory, quotations range as follows:

Eastern Pennsylvania, No. 2 X Foundry.	\$17.25 to \$17.50
Eastern Pennsylvania, No. 2 Plain.	16.75 to 17.00
Virginia, No. 2 X Foundry.	17.25 to 17.75
Virginia, No. 2 Plain.	17.00 to 17.25
Gray Forge.	16.25 to 16.50
Basic.	16.75 to 17.00
Low Phosphorus.	21.50 to 21.75

**Ferromanganese.**—The demand is small. Prices still show a considerable range, some sellers quoting \$1 and more above the market, which for prompt shipment ranges from \$44 to \$45, Baltimore, with \$45 to \$46 named for first half deliveries.

**Plates.**—Makers report somewhat more active conditions. The past week showed an improvement both in specifications and new orders, and the outlook is believed to be better. Some large orders for boat Steel are pending, while more locomotive and structural business is in sight. Production at the mills shows a slight improvement. Prices are

being maintained and range as follows for deliveries in this vicinity:

	Carloads.	Parts
	Cents.	Cents.
Tank, Bridge and Boat Steel.....	1.75	1.80
Flange or Boiler Steel.....	1.85	1.95
Commercial Firebox.....	1.95	2.00
Marine.....	2.15	2.20
Locomotive Firebox Steel.....	2.25	2.30
The above are base prices for ¼-in. and heavier. The following extras apply:		
3-16-in. thick.....	\$0.10	
Nos. 7 and 8, B. W. G.....	.15	
No. 9, B. W. G.....	.25	
Plates over 100 to 110 in.....	.05	
Plates over 110 to 115 in.....	.10	
Plates over 115 to 120 in.....	.15	
Plates over 120 to 125 in.....	.25	
Plates over 125 to 130 in.....	.50	
Plates over 130 in.....	1.00	

**Billets.**—Business continues light, and almost entirely for prompt shipments, individual orders in few cases exceeding 100 tons. Quotations are unchanged, \$26.20 being named for Ordinary Rolling Steel, with Forging Steel \$28.20, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—Immediate business has not been very heavy, current orders being of a miscellaneous character. The outlook from the building standpoint is better, and some fair business is expected to develop in the near future. Fabricators are fairly busy with the work in hand, and mills maintain about an even rate of production. For delivery in this territory prices range from 1.75c. to 1.90c., according to specifications.

**Sheets.**—Sufficient tonnage develops from week to week to keep mills pretty fully occupied, but it is almost entirely of a prompt nature, and makers have but little forward business on their books. Quotations for mill shipments, a tenth extra being added for small lots, range as follows: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—There has been a slight improvement in the demand for Refined Iron Bars, and less difficulty is experienced in taking business at ruling quotations, which are a shade higher owing to the fact that the available supply of low price Bars is being pretty well cleared up. Individual transactions are not large, although in the aggregate sales show an increase. Refined Iron Bars for delivery in this territory are quoted at 1.55c. to 1.60c., with Steel Bars, 1.55c., delivered.

**Coke.**—Some moderate business in Foundry Coke has been done and prices are firm. In Furnace Coke conditions are not quite so strong, production in some instances exceeding the demand, and there is a weakening tendency in the price for prompt Coke. For delivery in this territory prices range as follows:

Connellsville Furnace Coke.....	\$3.90 to \$4.10
Foundry Coke.....	4.20 to 4.50
Mountain Furnace Coke.....	3.50 to 3.70
Foundry Coke.....	3.80 to 4.10

**Old Material.**—The deadlock between the buyers of Heavy Melting Steel Scrap and the leading merchants is still on, although some weak spots have developed, which enabled one Eastern mill to purchase about 7000 tons during the week, for none of which over \$17, delivered in buyer's yard, was paid. The majority of sellers still hold out for higher prices. Buyers maintain their former position, but would purchase large tonnages if their views of prices would be met. The market generally is quiet, pending announcements from the railroads on their recent offerings, which will come out this week. Outside of the above mentioned transactions the market has been quiet, scarcely enough business being done to establish prices, which for delivery in buyers' yards in this territory are nominally quoted as follows:

No. 1 Steel Scrap and Crops.....	\$17.00 to \$17.75
Low Phosphorus.....	20.00 to 21.00
Old Steel Axles.....	22.50 to 23.00
Old Iron Axles.....	24.25 to 24.75
Old Iron Rails.....	21.25 to 21.75
Old Car Wheels.....	16.00 to 17.00
Choice No. 1 R. R. Wrought.....	20.00 to 20.50
Machinery Cast.....	16.00 to 16.50
Railroad Malleable.....	15.75 to 16.25
Wrought Iron Pipe.....	15.25 to 15.75
No. 1 Forge Fire Scrap.....	13.75 to 14.25
No. 2 Light Iron.....	10.00 to 10.50
Wrought Turnings.....	14.00 to 14.50
Stove Plate.....	13.75 to 14.25
Cast Borings.....	13.00 to 13.50
Grate Bars.....	14.50 to 15.00

The total 1908 gold output for the world is estimated by Frank A. Leach, Director of the Mint, at \$427,000,000, as against \$410,555,000 for the year 1907. Africa, as usual, is the largest contributor to this increase, the yield for that country being \$165,000,000, as against \$151,699,000 for the previous year. The production of the United States shows the next largest increase, being \$96,300,000 in 1908, as compared with \$90,435,000 for the previous year.



## Cincinnati.

CINCINNATI, OHIO, January 13, 1909.—(By Telegraph.)

There are no tangible evidences of increasing strength in any department of the Iron and Steel trade, and prices seem a trifle weaker, although this sentiment could scarcely be applied to the machine tool and machinery market in general, in behalf of which an accumulation of inquiries and some fairly good sales indicate a very hopeful tone. Many large concerns are still busy with the details of inventory taking, and not much is expected of January. Jobbing foundries are still slow about taking any additional Iron, and the local melt has not increased appreciably, and to hardly the extent expected. There is a little better feeling among manufacturers of Ornamental and Structural Iron. It is the general opinion here that the Pipe companies, which were in the market for a considerable tonnage of Iron, have not purchased anything like the amount expected. The larger Coke selling agencies report an increase in shipment orders on contract Foundry Coke, from which it is argued that a better melt is foreshadowed.

**Pig Iron.**—Some of the larger consuming interests, believing evidently that the time is propitious for taking on enough to fill out first half requirements, have been feeling the market for good sized tonnages. An Ohio Pipe manufacturer, who wants 1500 tons a month of low grade Iron for the first half, is expected to close to-day; a large Indiana manufacturer of agricultural supplies is asking prices on 1000 tons of Nos. 2 and 3 Foundry; a large tool works concern in southern Ohio wants 1000 tons, half Northern and Southern, Nos. 2 and 3 Foundry, for first quarter or option of extending through the first half; a large manufacturer of radiators is also in the market for a considerable tonnage if he can get it at his price; an inquiry from Cleveland territory is for 500 tons of Northern Iron, January and February delivery; another from the Detroit District is for 300 tons, preferably Southern Foundry. A late item of interest to consumers of High Silicons is the agreement entered into by the four Jackson County furnace interests offering split grades; in other words, on a basis of \$18.50 for 8 to 10 per cent, inclusive, the differential is 25 cents for each half unit, as, for example, 8½ per cent. would be \$18.75. Above 10 per cent, the basis is 50 cents per half unit, making 10½ per cent. \$20, and 11 per cent. \$20.50. The prevailing scarcity of low grades seems as pronounced as ever, and it is claimed that Forge is bringing a flat \$12, Birmingham price, with very little to be had. Furnace interests in the southern Ohio District seem to be confident of an increasing consumption to take care of present production, and are holding firmly, apparently, at a minimum of \$15.50 at furnace for No. 2. Opinions of authorities in touch with the situation in this district estimate between 60,000 and 75,000 tons on furnace yards at the present time. There is no inquiry for Malleable. There is reported here a considerable inquiry for Basic from the East, among them one from an eastern Pennsylvania Steel company for 15,000 tons. For the first time for several weeks a little resale Southern Iron is offered, reported at \$12.75, Birmingham, for No. 2. This is construed as an outcropping of the speculative spirit shown by certain large Scrap concerns during the heavy November buying, who secured from 5000 to 15,000 tons as an investment. For the first quarter and half, based on freight rates of \$3.25 from Birmingham and \$1.10 from the Hanging Rock District, we quote, delivered, Cincinnati, as follows:

Southern Coke, No. 1.....	\$16.75 to \$17.25
Southern Coke, No. 2.....	16.25 to 16.75
Southern Coke, No. 3.....	15.75 to 16.25
Southern Coke, No. 4.....	15.25 to 15.75
Southern Coke, No. 1 Soft.....	16.75 to 17.25
Southern Coke, No. 2 Soft.....	16.25 to 16.75
Southern Coke, Gray Forge.....	14.75 to 15.25
Southern Mottled.....	14.50 to 15.00
Ohio Silvery, 8 per cent. Silicon.....	19.60 to 20.10
Lake Superior Coke, No. 1.....	17.10 to 17.60
Lake Superior Coke, No. 2.....	16.60 to 17.10
Lake Superior Coke, No. 3.....	16.10 to 16.60
Standard Southern Car Wheel.....	22.25 to 23.25
Lake Superior Car Wheel.....	21.75 to 22.75

(By Mail.)

**Coke.**—The market is weaker, with what appear to be strong inducements in spot Coke. The Connellsville District seems to be the most favorable to the consumer this week, with spot Furnace brands as low as \$1.60, at oven, and ranging from \$1.90 to \$2 on contract. Connellsville 72-hr. Foundry grades, spot, \$2 to \$2.10, and on contract, \$2.35 to \$2.50. Pocahontas Furnace Coke on contract is obtainable now as low as \$2; Wise County Furnace grades, spot, about \$1.55, and Foundry \$2.10, and on contract about \$2.25; Wise County Furnace Coke on contract about \$1.85. Owners of ovens are not expecting much additional business for 60 days or so, but after that period are confidently anticipating higher prices to rule.

**Finished Iron and Steel.**—Dealers report a little larger inquiry, with a slightly better run of orders on all items, particularly Plates and Angles for factory installations. Bar Iron is the weakest of the list, and prices are off a little on carload lots—namely, 1.50c., Cincinnati. A little Iron manufactured in this district in small lots has un-

settled local dealers' prices somewhat, but does not cut much figure in the general trade. Larger dealers do not expect much change in the situation for 60 days, when it is hoped several important Structural jobs now in hands of architects and engineers will have matured. For the present dealers quote to the trade, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.50c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—There is a weakening of from 50c. to \$1 on all items of Scrap, No. 1 Railroad Wrought being off fully \$1 per ton. Other items coming under this list especially are Heavy Melting Steel, Steel Rails, and Borings. The largest local dealers deny that anything of consequence is expected from the early starting of the Gary plant. Business is very quiet, and little improvement is anticipated before the middle of February or early March. Mills in this section are pretty well stocked up on Heavy Melting Steel. Prices to the trade, f.o.b. Cincinnati, are about as follows:

No. 1 R. R. Wrought, net ton.....	\$13.00 to \$14.00
Cast Borings, net ton.....	5.50 to 6.50
Heavy Melting Steel Scrap, gross ton..	13.50 to 14.50
Steel Turnings, net ton.....	6.00 to 7.00
No. 1 Cast Scrap, net ton.....	12.50 to 13.00
Burnt Cast, net ton.....	9.00 to 10.00
Old Iron Axles, net ton.....	16.75 to 17.75
Old Iron Rails, gross ton.....	15.00 to 16.00
Old Steel Rails, short, gross ton.....	13.00 to 14.00
Old Steel Rails, long, gross ton.....	13.00 to 14.00
Relaying Rails, 56 lb. and up, gross ton	21.50 to 22.50
Old Car Wheels, gross ton.....	15.50 to 16.50
Low Phosphorus Scrap, gross ton.....	14.00 to 15.00

## St. Louis.

St. LOUIS, January 11, 1909.

Ordinances authorizing an expenditure by this city of \$800,000 for water works improvements are being drafted. One is now pending in the Board of Public Improvements, which likely will be acted upon at the next meeting of the Municipal Assembly. It authorizes the expenditure of \$50,000 for a subpumping station near the Insane Asylum. Another ordinance authorizes the expenditure of \$240,000 for pipe extensions. A third provides for a chemists' laboratory to cost \$10,000. About \$500,000 will be spent as soon as ordinances can be passed authorizing the erection of a new pumping station at Bissell's Point, to be used as an auxiliary station for the southwest part of the city.

**Coke.**—The trade reports some inquiry and moderate sales, mostly car lots for prompt shipment. Specifications on contracts are coming in freely and for this reason there will soon be an improvement in the direction of sales and possibly with regard to prices. We hear of a sale of 72-hr. Foundry, standard Connellsville, at \$2.35, at oven, for shipment over 1909, but this, it is claimed, does not represent market values, which are as follows: For prompt shipment, \$2.15; for shipment over first half 1909, \$2.50. It is thought that \$2.50, Connellsville, would be accepted for shipment over the entire year.

**Pig Iron.**—While there is some improvement in inquiry and sales, business is ruling quiet. This, however, being usually the case at the opening of the year, creates no surprise. None of the offices reports inquiry exceeding 500 tons, but the aggregate with some houses makes quite a satisfactory showing in sales. Iron is not being offered freely and business is mainly confined to the first quarter. The larger buyers are fairly well supplied for their present needs, but it is expected that they will soon be in the market for supplies for the second quarter. Prices show no change, but the feeling is firmer. We quote Southern No. 2 Foundry, Birmingham, as follows: First quarter, \$13; second quarter, \$13.50; first half, \$13.25. No offerings of second half are being made. Ohio Iron is quoted at \$15.50 to \$16 for No. 2 at Ironton; Northern Silvery, 8 per cent. Silicon, \$18.50 to \$19, at Jackson County furnaces.

**Finished Iron and Steel.**—Though a comparatively mild winter in this section is admitting of more building going on than usual, it happens, at present, not to be to much extent of a class requiring Iron or Steel material. In Bars and Bar products, there is some business, but prices are not firm. For Standard Rails there is but little inquiry, but the demand for Light Rails continues. All classes of Track Material are in excellent demand.

**Old Material.**—The market for Old Material, though



not active, is ruling strong. The lack of demand for the present is offset by the situation at the East and by the scarcity of low grade Pig Iron. Furthermore, the railroads seem to have disposed of most of their holdings. As the mills and foundries are fairly busy, it is expected that the coming week will show more business doing with consumers. Relaying Rails continue in good demand and stocks are only moderate in dealers' hands. The following offerings by railroads are reported: Missouri Pacific, 2200 tons; Vandalia, 200 tons; San Francisco, 1500 tons. In prices there is no change, though absence of demand renders some of the figures quoted merely nominal. We quote per gross ton, f.o.b. St. Louis, as follows:

Old Iron Rails.....	\$17.00 to \$17.50
Old Steel Rails, rerolling.....	15.25 to 15.50
Old Steel Rails, less than 3 ft.....	14.75 to 15.25
Relaying Rails, standard sections, subject to inspection.....	24.00 to 24.50
Old Car Wheels.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	14.75 to 15.25
Frogs, Switches and Guards, cut apart.....	14.75 to 15.25
Mixed Steel.....	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates.....	\$16.00 to \$16.50
Iron Car Axles.....	20.00 to 20.50
No. 1 Railroad Wrought.....	14.50 to 15.00
No. 2 Railroad Wrought.....	13.50 to 14.00
Railway Springs.....	13.00 to 13.50
Locomotive Tires, smooth.....	13.50 to 14.00
No. 1 Dealers' Forge.....	11.50 to 12.00
Mixed Borings.....	7.00 to 7.50
No. 1 Boilers, cut to Sheets and Rings.....	10.00 to 10.50
No. 1 Cast Scrap.....	13.50 to 14.00
Stove Plate and Light Cast Scrap.....	10.50 to 11.00
Railroad Malleable.....	12.00 to 12.50
Agricultural Malleable.....	10.50 to 11.00
Pipes and Flues.....	10.50 to 11.00
Railroad Sheet Scrap.....	11.50 to 12.00
Railroad Grate Bars.....	11.50 to 12.00
Machine Shop Turnings.....	9.50 to 10.00

**Lead, Spelter, Etc.**—Pig Lead is ruling quiet, with last sales reported at 4.10c. to 4.15c. The recent cold snap interfered with the production of Lead, and this will tend to import firmness to the market. Lead Ore is held at \$26 per 1000 lb. Joplin. Spelter is not active and the range is from 5.12½c. to 5.50c., according to brands. The demand has fallen off temporarily, owing to the season of the year, which brought the usual stock taking and accounting, together with getting ready for spring business. Zinc Ore is strong at \$41 to \$42, base. The production is much curtailed by cold weather and the shortage of natural gas which causes the mills operating with gas to be hampered in working. Copper is steady; Tin weak; Antimony steady.

The American Car & Foundry Company has increased its business considerably of late and is now operating at 75 per cent. of full capacity.

## Birmingham.

BIRMINGHAM, ALA., January 11, 1909.

**Pig Iron.**—From reports of parties most conversant with the Southern market, it is derived that the schedule of \$13 per ton, Birmingham, on a No. 2 Foundry basis, cannot be shaded for early deliveries; that the demand for low grades is such that the differential in asking prices will most likely be diminished, and that the attitude of sellers as to deliveries during the second half is warranted by a comparison of order books with the present rate of production and accumulations on furnace yards. As far as can be ascertained, no figures have yet been elicited on third quarter deliveries, although the number of inquiries is hardly equal to expectations some weeks ago. The recent additions to order book requirements, as indicated by the records, consisted of scattering lots of 100 to 500 tons, with shipments to cover 60 to 90 days specified. A telegraphic communication reports the sale of 20,000 tons in one lot, but the details of the transaction are not yet obtainable. On a lot of 600 tons of high manganese iron, among latest reports, \$13.50 per ton, Birmingham, was the price consideration. This price was also received for a number of carload lots of the same brand for spot shipment. The principal inquiries pending at this time are from Pipe manufacturers and involve 4000 tons of No. 4 Foundry and Gray Forge, 1000 tons of Nos. 3 and 4 Foundry, and 1000 tons of No. 4 Foundry. In each case it is desired that shipments commence promptly. The quantity of grades below No. 3 available for early shipment is extremely limited, and in the case of leading producers contracts for forward deliveries are not entered into. It is notable that the output of local furnaces during recent months has averaged a higher grade than ever before, while founders have been inclined toward a more economical mixture.

**Cast Iron Pipe.**—Additional significant orders are now in sight, and recent developments relative to prices are of a satisfactory nature. It is probable that figures being quoted by Southern interests would be shaded on large municipal contracts, but not to the extent to indicate a departure from the basis, and the market is believed to be firmer at quotations appended than at the time of last report. Among the lettings now in sight, the following are most interesting:

Indianapolis, Ind., 5000 to 8000 tons; Kansas City, Mo., 1000 tons; East Point, Ga., 1000 tons, and from 1000 to 2000 tons for Florida points. The minor lots for maintenance work have increased in proportion similar to the contract orders, and, taken as a whole, the market is in a satisfactory condition. We quote as follows, per net ton, for Water Pipe f.o.b. cars here: 4 in. to 6 in., \$25; 8 in. to 12 in., \$24; over 12 in., average, \$23, with \$1 per ton extra for Gas Pipe.

**Old Material.**—In view of the inquiry for Steel Scrap, the price of that grade has been advanced. The inquiry for other grades is encouraging, but the aggregate of movement from dealers' yards indicates but little improvement in the consumption. Dealers manifest no disposition to force a market at the expense of quotations, and are increasing their stocks whenever practicable. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$15.00 to \$15.50
Old Iron Axles.....	16.00 to 17.00
Old Steel Axles.....	13.50 to 14.00
No. 1 Railroad Wrought.....	14.00 to 14.50
No. 2 Railroad Wrought.....	11.00 to 11.50
No. 1 Country Wrought.....	11.00 to 11.50
No. 2 Country Wrought.....	9.50 to 10.00
No. 1 Steel.....	11.00 to 11.50
No. 1 Machinery.....	11.50 to 12.00
Standard Car Wheels.....	13.50 to 14.00
Tram Car Wheels.....	12.00 to 12.50
Stove Plate and Light Cast.....	9.50 to 10.00
Cast Borings.....	5.50 to 6.00

## Cleveland.

CLEVELAND, OHIO, January 12, 1909.

**Iron Ore.**—The present inactive condition of the Pig Iron market does not encourage furnacemen to make haste in providing for their Ore supply for the coming year, and there are no inquiries. Dealers have not taken up the question of prices, and will probably delay action until it appears that the furnacemen are about ready to buy. Shipments from the docks to the furnace yards have fallen off, and are now very light. It is not expected that much will be shipped from the docks before March. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

**Pig Iron.**—The only sales reported are a few small lots of Foundry Iron. While there are reports that prices are not being maintained, particularly on spot Iron, local furnace interests have made sales for outside shipment at \$16, at furnace, for No. 2 Foundry. The leading Pipe interest is feeling the market for a round tonnage of Foundry Iron, and it is understood that a Massillon Pipe foundry will also take on more if a satisfactory price is secured. Neither has covered for its entire requirements for the first half. The only definite inquiry of any size for a specific quantity came from a consumer in this territory for 500 tons of Foundry Iron for first quarter delivery. A few consumers have asked that shipments be withheld until their inventories are finished, but with these exceptions Iron is being taken freely on contract. Local furnaces quote No. 2 Foundry Iron at \$16 for outside shipment and \$16.50 to \$16.75, delivered, Cleveland. We quote No. 2 Foundry at \$15.50 to \$16, Valley furnace. There are a few inquiries for Southern Iron, but the sale of only one small lot is reported. Scottsdale Furnace of Corrigan, McKinney & Co., which has been rebuilt, will go in blast on Foundry Iron January 15. For first quarter and first half we quote, delivered, Cleveland, as follows:

Bessemer .....	\$17.40
Northern Foundry, No. 1.....	\$16.90 to 17.40
Northern Foundry, No. 2.....	16.50 to 16.90
Northern Foundry, No. 3.....	16.00 to 16.50
Gray Forge .....	15.25 to 15.50
Southern Foundry, No. 2.....	17.35 to 17.85
Jackson Co. Silvery, 8 per cent. Silicon.....	20.05

**Coke.**—The market is quiet, the only activity being the sale of small lots of spot Foundry Coke. One furnace interest is expected to be in the market soon. Prices on contract Coke are stationary, and not quite as low prices are being named on spot Coke as in the previous two weeks. We quote Standard Connellsville Furnace Coke for the first half at \$1.90 to \$2, at oven, and Connellsville 72-hr. Foundry Coke at \$2.25 to \$2.40. For spot shipment Foundry Coke is quoted at \$2.20 to \$2.25.

**Finished Iron and Steel.**—Nearly all the sales agencies of the mills report some improvement in specifications, although orders are not yet quite as plentiful as before the holidays. A further improvement is expected after this week, when inventories will be completed. Encouraging reports continue to come from manufacturing plants. The majority of consumers have small stocks, and many of the specifications that are coming in are for quick shipment. Jobbers report an improvement in both mill orders and warehouse business. Some improvement is noted in the demand for Iron Bars, and both the local mills are running this week. Prices are being firmly maintained. Specifications are largely for Steel Bars, and small lots of Structural Material, but there is a slight improvement in the demand for Plates and Sheets. Some fairly good orders

for Plates and Boiler Tubes have come from builders of traction engines, who announce that their output this year will be slightly larger than last year. These orders are for delivery during January and February. Business has improved considerably with makers of Drop Forgings, and good specifications are now coming from them. Several building contracts will soon come up in this city that will require a small tonnage. Bridge building companies have only a limited amount of work on hand at present and their specifications are light. The price of Plates for the narrow sizes is being shaded from \$1 to \$2 a ton. Sheets are fairly firm, but in some cases prices are still being shaded. We quote: Iron Bars, 1.50c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, 1/4-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron Bars out of stock at 1.55c. to 1.60c., and Steel Bars at 1.60c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, 1/4-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2 3/4 to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The continued dullness of the market has resulted in further weakness, and prices of about all grades have declined 50c. a ton during the past week. In the case of Heavy Melting Steel the price has been sustained by some buying by a dealer who sold short, and last week's quotation is unchanged. Few inquiries are coming in, and local mills are not taking much Scrap on contract. Mills do not appear to be eager to buy at the price concession, at which some of the dealers are freely offering their Scrap. Among the railroad offering this week is a list of 3500 tons, to be sold by the Baltimore & Ohio. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails.....	\$16.00 to \$16.50
Old Iron Rails.....	18.50 to 19.00
Steel Car Axles.....	20.00 to 20.50
Old Car Wheels.....	15.50 to 16.00
Heavy Melting Steel.....	15.25 to 15.75
Relaying Rails, 50 lb. and over.....	21.50 to 22.50
Agricultural Malleable.....	13.00 to 13.50
Railroad Malleable.....	14.50 to 15.00
Light Bundled Sheet Scrap.....	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$19.50 to \$20.00
Cast Borings.....	8.00 to 8.50
Iron and Steel Turnings and Drillings.....	9.50 to 10.00
Steel Axle Turnings.....	10.50 to 11.00
No. 1 Bushelling.....	12.50 to 13.00
No. 1 Railroad Wrought.....	15.00 to 15.50
No. 1 Cast.....	13.50 to 14.00
Stove Plate.....	11.50 to 12.00
Bundled Tin Scrap.....	9.00

## Pittsburgh.

PARK BUILDING, January 13, 1909.—(By Telegraph.)

**Pig Iron.**—The market is almost lifeless, but in spite of this prices are fairly strong, and there is no disposition on the part of the furnaces to lower their prices to induce purchases. Reports are that the Gray Iron foundries and the makers of Malleable Castings are doing very little, and not much improvement in the demand for Foundry or Malleable Bessemer Iron can be looked for at present. Consumers of Forge Iron, that is the Bar Iron mills, are running only intermittently as orders warrant, and the consumption of Forge Iron is therefore light. There is no important change in prices of Pig Iron, and we quote: Standard Bessemer, \$16.50; Malleable Bessemer, \$15.75 to \$16; Basic, \$15.50 to \$15.75; No. 2 Foundry, \$15.50, and Gray Forge, \$14.50, all at Valley furnace, with a freight rate of 90c. a ton for Pittsburgh delivery.

**Steel.**—Few new orders are being placed for Billets or Sheet and Tin Bars, but the large Steel companies state that specifications against contracts are coming in at a fairly satisfactory rate, and shipments of Steel in December were about as heavy as in November. We quote Bessemer and Open Hearth Billets, 3 3/4 in. and larger, up to and including 0.25 carbon, \$25; 0.26 to 0.60 carbon, \$1 extra; over 0.60 carbon, \$2 extra, all f.o.b. Pittsburgh. For Wheeling, Martin's Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are \$27.50, f.o.b. Pittsburgh. Forging Billets take \$2 advance over Rolling Billets.

(By Mail.)

Developments in the Iron trade, so far in the new year, have been a distinct disappointment, new orders and specifications against contracts being much lighter than in Decem-

ber. Various reasons are put forth to explain the present apathy in the Iron trade, among these being the general desire to wait until the new President has announced his views and policies on matters of vital interest to our manufacturers and to the general belief that lower prices on Iron and Steel will result if a heavy cut is made in the tariff. Jobbers and consumers alike are holding back contracts, placing orders only for small lots, to meet actual current needs. The demand for Pig Iron is light, few inquiries being in the market. In spite of the lack of demand, prices of Pig Iron are firm, and there is no disposition so far on the part of the furnaces to name lower prices to get business. Practically no new orders are being placed for Steel, while specifications against contracts for Billets, and Sheet and Tin Bars are coming in at a fairly satisfactory rate. The demand for Finished Iron and Steel is light, and the same is true of specifications against contracts. The Coke and Scrap trades are dull, with prices on the former weaker than for some time, due to lack of demand.

**Ferromanganese.**—No large lots have been sold in this market for some time. We quote 80 per cent. foreign Ferro at \$44 to \$44.50, seaboard, which carries a freight rate of \$1.95 a ton to Pittsburgh.

**Ferrosilicon.**—A local consumer bought a carload of about 25 tons of 50 per cent. last week on the basis of \$62.50, delivered, Pittsburgh. We quote 50 per cent. at \$62.50 to \$63, Pittsburgh.

**Muck Bar.**—The market is very dull. The Kittanning Iron & Steel Mfg. Company started up its Muck Bar mill, at Kittanning, Pa., on Monday, with a fair run of orders. We quote best grades of Bar, made from all Pig Iron, at about \$28, Pittsburgh.

**Wire Rods.**—Specifications against contracts for Wire Rods in the past month have been light, but it is believed that they will improve as soon as the spring demand for Wire opens up. Two inquiries for a fairly large tonnage of Rods are in the market, but have not yet been closed. We quote Bessemer Rods at \$33; Chain Rods, \$33, and Basic, \$34, Pittsburgh.

**Skelp.**—The demand for Grooved and Sheared Iron Plates continues active, and the mills rolling such product are filled up for several months, while prices are very firm. Steel Skelp is quiet, but prices are fairly strong. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c. to 1.80c., and Sheared Iron Skelp, 1.90c. to 1.95c., Pittsburgh. We note sales of 1500 to 2000 tons of Sheared Iron Plates at about 1.90c., Pittsburgh.

**Steel Rails.**—The expected orders for Steel Rails have not yet developed. The demand for Light Rails holds up fairly well, the Carnegie Steel Company having taken new orders and specifications against contracts last week for about 1800 tons. Prices on Rolled Light Rails are said to be firmer, due to the higher prices asked by the dealers for Old Rails. Prices on new Light Rails, rolled from Billets, are as follows: \$25 for 25 to 45 lb. Sections, with \$1 advance for 20 lb., \$2 advance for 16 lb., and \$3 advance for 12 lb. Standard Sections are \$28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—No new local contracts have been placed in the past week. While a fairly large amount of work is in sight, Structural interests believe that this and next month will be very quiet, but look for larger operations in March or April. The relatively small amount of new work going is being placed at low prices. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c. net; H. Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, 1/4 in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than 1/4 in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Ribbed Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—The larger mills are filling some orders on contracts for Plates for Steel cars, but the tonnage under contract is small, and unless additional orders for cars are placed this work will soon be cleaned up. The Pressed Steel Car Company is operating its McKees Rock plant nearly full, making 40 to 50 cars a day, and has orders ahead for two months, but its Woods Run plant is still practically idle. The General demand for Plates is fairly heavy, and several mills report more actual business booked in December than in any month last year. Prices are still being shaded by some mills from \$1 to \$2 a ton, but regular prices are unchanged, as follows: Tank Plates, 3/4 in. thick, 6 1/4 in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, 1/4-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered 1/4-in. Plate. Steel Plates over 72 in. wide must be ordered 1/4-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72



in. wide ordered less than 11 lb per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under 1/4-in. to and including 3-16-in. Plates on thin edges.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10*
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates.....	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Locomotive Firebox Steel.....	.50
Shell grade of Steel is abandoned.....	
For widths over 100 in. up to 110 in.....	.05
For widths over 110 in. up to 115 in.....	.10
For widths over 115 in. up to 120 in.....	.15
For widths over 120 in. up to 125 in.....	.25
For widths over 125 in. up to 130 in.....	.50
For widths over 130 in.....	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c. f.o.b. Pittsburgh.

**Sheets.**—The demand for all kinds of Sheets is light, and none of the mills is able to operate full. This week the American Sheet & Tin Plate Company is operating 53 per cent. of its Sheet capacity, and this also represents about the rate at which the other mills are running. Prices are still being slightly shaded, not over \$1 to \$2 a ton, by some mills that seem anxious to book orders. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, \$1.75 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, for 21-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—While not many new orders are being placed, the mills have large contracts against which specifications are coming in freely, and they are operating to fairly large capacity, the American Sheet & Tin Plate Company having 66 per cent. of its Tin Plate mills in operation this week. Prices are fairly strong and are reported as being maintained by the larger mills. We quote: \$3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Iron and Steel Bars.**—The demand for both Iron and Steel Bars has been quiet in the past two weeks, and specifications against contracts have also fallen off, due to the stock taking period. It is believed, however, that conditions will soon materially improve. The Bar Iron mills are not able to get enough work to operate in full, but continue to run intermittently as orders warrant. The market is firm, and we quote Iron Bars at 1.42c., Pittsburgh, for Western shipment, or 1.60c., Chicago, while the price for delivery in the Pittsburgh District is 1.50c. Iron Bars rolled from strictly Muck Bar stock, such as Zug, Lockhart and a few others, are held at about 1.90c., at mill. Steel Bars are firm at 1.40c., Pittsburgh, for base sizes.

**Hoops and Bands.**—As yet no new prices have been announced this year by the makers of Hoops and Bands, and it is believed now that present prices will remain in force. The Clark Steel Hoop Company has started up its Hoop mill at Punxsutawney, Pa., and is now rolling Hoops, Bands and light Shapes. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1909.

**Railroad Spikes.**—No large contracts are being placed, and the makers of Railroad Spikes have few unfilled orders on their books. The demand for the smaller sizes is fairly active. Prices are firm, and we quote: Standard sizes, 4 1/2 x 9-16 in., at \$1.70, and the smaller sizes at \$1.80 per 100 lb., in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—The situation is very dull, both as regards new orders and specifications against contracts, but it is believed that these will soon show betterment. The mills have some good contracts, and with stocks in the hands of jobbers very light, heavier specifying against these contracts should soon come. We quote Cold Rolled Shafting at 57 per cent. off in carloads, and 52 per cent. in less than carloads, delivered in base territory. Regular prices on Merchant Steel, which are being shaded to some extent, are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire

Steel, Iron finish, 1 1/2 x 1/2 in. and heavier, 1.40c.; under 1 1/2 in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—Prices are firmer, and prime Western grades are now held at 5c. to 5.05c., East St. Louis, most sellers asking the higher figure, which is equal to 5.17 1/2c., Pittsburgh.

**Merchant Pipe.**—New orders and specifications against contracts for Merchant Pipe in December, which is always an off month in the Pipe trade, were fairly satisfactory to the mills, and it is believed that January will show a gain on December. Several large contracts for line Pipe are about ready to be placed, involving heavy tonnage, and are expected to be given out this month. We are advised that regular prices on both Iron and Steel Pipe are being absolutely maintained by the mills. Discounts on Steel Pipe, 3/4 to 6 in., to the large trade, are 75 and 5 per cent. off list, while a few of the very largest jobbers, that have mill connections, are given 76 and 5 per cent. off list. Regular discounts are as follows:

#### Merchant Pipe.

	Black.	Galv.
1/4 to 1/2 in.....	.67	.51
3/8 in.....	.69	.55
1/2 in.....	.71	.59
3/4 to 6 in.....	.75	.65
7 to 12 in.....	.72	.57
Extra strong, plain ends:		
1/4 to 3/8 in.....	.60	.48
1/2 to 4 in.....	.67	.55
4 1/2 to 8 in.....	.63	.51
Double extra strong, plain ends:		
1/2 to 8 in.....	.56	.45

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
1/4 to 1/2 in.....	.65	.50
3/8 in.....	.67	.53
1/2 in.....	.69	.57
3/4 to 6 in.....	.73	.63
7 to 12 in.....	.70	.55
Extra strong, plain ends:		
1/4 to 3/8 in.....	.58	.46
1/2 to 4 in.....	.65	.53
4 1/2 to 8 in.....	.61	.49
Double extra strong, plain ends:		
1/2 to 8 in.....	.54	.43

**Boiler Tubes.**—The market is practically lifeless, and the Tube trade could hardly be in worse condition from the buying standpoint. The railroads are placing practically no orders for railroad Tubes, while consumers of Merchant Tubes are buying only in small lots to meet current needs. Regular discounts on Merchant Tubes, which, however, are being shaded and do not represent the actual market, are as follows:

#### Boiler Tubes.

	Iron.	Steel.
1 to 1 1/2 in.....	.42	.47
1 3/4 to 2 1/4 in.....	.42	.59
2 1/2 in.....	.47	.61
2 3/4 to 5 in.....	.52	.65
6 to 13 in.....	.42	.59
2 1/2 in. and smaller, over 18 ft. long, 10 per cent. net extra.		
2 3/4 in. and larger, over 22 ft. long, 10 per cent. net extra.		

**Iron and Steel Scrap.**—With the single exception of Re-rolled Rails, which are higher, and are now quoted at \$17.50 to \$18, delivered, prices of all grades of Scrap seem to be somewhat weaker. Cast Iron Borings and Machine Shop Turnings are decidedly weak, and prices of these have gone off considerably. The Allegheny Steel Company is reported as having taken in a considerable tonnage of Scrap, while stocks held by several other large consumers are low, and the latter are expected to take in good quantities this month. Bids on the Baltimore & Ohio and Pennsylvania Railroad (Eastern lines) offerings closed Tuesday, and it is expected that bids made by dealers were somewhat lower than previously. Only carload lots of Scrap are being sold. The situation, therefore, seems to be leaning more to the consumers' side than for some time. We have reduced prices on Borings and Turnings, advanced prices slightly on Re-rolling Rails, and now quote, per gross ton: Heavy Steel Scrap for Pittsburgh, Monessen, Brackenridge, Sharon, Leechburg or Steubenville delivery, \$16.75 to \$17; Cast Iron Borings, \$11; Bundled Sheet Scrap, \$14.75 to \$15; No. 1 Busheling Scrap, \$14.50 to \$14.75; No. 2, \$10.50 to \$10.75; Iron Axles, \$24 to \$24.50; No. 1 Cast Scrap, \$15; Sheet Bar Crop Ends, \$20.75 to \$21; Re-rolling Rails, \$17.75 to \$18, delivered, Cambridge, Ohio, or \$18.25, delivered, Cumberland, Md.; Steel Axles, \$19.25 to \$19.50; Low Phosphorus Melting Stock, 0.04 and under in Phosphorus, \$18.50; Machine Shop Turnings, \$12.50; Grate Bars, \$13 to \$13.25; Railroad Malleable Scrap, \$15.50 to \$15.75; Railroad Wrought Scrap, \$16.75 to \$17; Locomotive Tires, \$17.25 to \$17.50; Iron Rails, \$18.50 to \$18.75. All prices are f.o.b. Pittsburgh, unless noted otherwise.

**Coke.**—Standard grades of Furnace Coke, loaded on cars, and which have to be moved, can be bought as low as \$1.50 per net ton, at oven, or perhaps lower, while \$1.90 to \$2 is quoted on best grades for first half of the year delivery, most producers asking the higher figure. Best makes of Foundry Coke are held at \$2.25 to \$2.50 at oven, while



some makers refuse to accept less than the higher figure. The Jamison Coal & Coke Company is building 60 new ovens at its No. 1 plant at Luxor, near Greensburg, in Westmoreland County, Pa. As fast as these new ovens are completed they will be placed in operation, and it is expected to have all of them running by March 1. This company will then have a total of 1230 ovens, all of which are in operation, and the Coke is being shipped out as fast as made. Some consumers of Foundry Coke, desiring to keep their stocks low in December, underestimated their requirements, with the result that some wire orders for Foundry Coke are being received, with a request that operators rush shipment. The output last week was 252,058 tons, an increase over the previous week of about 45,000 tons.

### The German Iron Trade in 1908.

BERLIN, December 28, 1908. To review the German Iron industry during the past twelvemonth is to describe a year of business depression. Indeed, the tide had begun to turn about the middle of 1907, but the outflow was rather gradual for the rest of the year, and down to the end of June, 1908, the production of Pig Iron had not been reduced by more than 5 per cent. Later, however, a more rapid contraction took place, so that for the first 11 months of the year production was about 10 per cent. less than in the like months of 1907. For the entire year the make of Pig Iron will apparently be about 11,725,000 metric tons, which compares with 13,045,750 tons for 1907. The downward course of production is clearly evident from the November figures, which amounted to only 930,738 tons, against 1,112,225 tons in November, 1908. The shrinkage amounted to 19½ per cent. Less iron was made in November than for any month since June, 1905, with the single exception of September, 1908, when the output was about 2000 tons less than in November. It is doubted whether production has yet reached low water mark.

The Steel Syndicate also shipped less steel in November than for any month for several years. Its shipments were 341,578 tons of Semifinished Material, Rails and Structural Shapes. This denotes a shrinkage of not less than 74,100 tons from the October shipments, and it was 81,400 tons less than in November, 1907. The contraction since October was mainly in Billets and Structural Shapes, but the movement of Steel Rails and other Track Material was also less by nearly 64,000 tons than in November, 1907, when the high water mark in Rail shipments was reached. The Syndicate explains the shrinkage of shipments since October as partly due to the fact that November had three working days fewer than October, but this would not apply to the comparison with November, 1907.

#### Leading Features of the Year's Trade.

The Iron trade has this year been characterized by two leading features: First, a sharp conflict of interests as between the great mixed works and the "pure" rolling mills, and, second, a similar conflict between the blast furnaces connected with the big Steel Syndicate companies and those operated independently—a conflict which led finally to the disruption of the Pig Iron syndicates in October and to the utter demoralization of the Pig Iron market.

The first of these controversies grew out of the policy of the Steel Syndicate in the matter of prices and of manufacturing more finished goods than hitherto. The Syndicate has made some reductions in Semifinished Material indeed, but the trade complains that these have not been in keeping with the necessities of the situation. Two reductions have been made since a year ago, amounting together to 15 marks per ton, but consumers point out that the prices of finished goods have fallen much more than that. Moreover, the Syndicate has been selling Steel products abroad at cut prices, and the finished goods manufactured in England and Belgium with this German material is sold in neutral markets so low that German independent rolling mills, using the dearer material sold in the home market, cannot possibly compete with their English and Belgian rivals. As the result of the Syndicate's policy the position of the independent rollers has been exceedingly unsatisfactory throughout the year; whereas another result is a big increase in the exports of Semifinished Material by the Syndicate. These exports have averaged above 50,000 tons per month for the past three months, or about three times as much as last year.

#### The Position of the Independent Rolling Mills.

The independent rolling mills have been placed in a most precarious position through the policy of the Syndicate. They say it is not possible to earn profits on some important lines of finished goods, like Bars and Plates. Only recently one old concern sold out its works and explained that its action was forced upon it through the course of the Syndicate.

In view of the high prices of Steel many of the independent mills started a movement in May or June to petition the Reichstag to reduce or abolish the duties on Pig Iron and Billets. This petition obtained numerous signatures and it was expected that it would be presented to the

Reichstag upon its assembling in November, but this has not yet been done. Possibly the delay has been caused by the action of the Government in trying to make peace between the two parties to the controversy. Several days ago a conference was held at Duesseldorf between them, presided over by the Prussian Minister of Commerce and attended by the Imperial Secretary of the Interior. The ministers, it seems, told the independent rollers that an abolition or reduction of duties was not to be thought of, and they confined themselves apparently to trying to induce the Syndicate to make better terms for them, but what positive results were reached is not yet known. The price-list for Billets given out about three weeks ago showed no reduction for the first half of 1909.

#### The Pig Iron Syndicates.

The disagreement in the Pig Iron syndicates was also largely the outgrowth of a conflict of interests between the furnaces of the big Steel Syndicate companies and the independent furnaces. During the recent years of high prosperity the great mixed works in the Steel Syndicate needed, as a rule, all the Iron they could produce at their own furnaces, and not a few had to buy extra quantities from the syndicates of which they themselves were also members. Special grades of Iron were also regularly supplied to many of the big works by certain independent furnaces. After the depression in business set in above a year ago the big mixed works could no longer use up all the Iron that their furnaces turned out, and they insisted upon delivering their surplus to the syndicates for sale. Their furnaces had their allotments in the syndicates, but they had not been utilizing them in the prosperous years. The Steel Syndicate companies, in other words, insisted upon having an entirely free hand; they must have allotments in the syndicates without being obliged to supply Iron at times when their own consumption was heavy, but in dull times, when sales are difficult, they must have the right to resume supplying Iron on their allotments which they had hitherto disregarded. To make matters still worse for the independent furnaces, some of the big Steel Syndicate companies, instead of blowing out their furnaces, set them to smelting grades of Iron which they had hitherto bought from the independents. Thus the latter felt themselves doubly injured by the course of those companies.

In large part owing to this conflict of interests it was found impossible to renew the Pig Iron syndicates. Many establishments had taken the position, when the negotiations for renewal began about the middle of the year, that they would only enter a syndicate if all the furnaces of the empire could be induced to join one general organization, which should be strong enough to compel all members to fulfill their obligations to deliver Iron to the central selling agency. Efforts were made for some months to get up a national syndicate on this basis, but they came to nothing and were abandoned in October. This result left the furnaces free to begin taking contracts for 1909 delivery at their own prices, and many of the Steel Syndicate furnaces set to working off their accumulated stocks at extremely low prices. For several weeks in November Bessemer Pig Iron was sold at prices ranging as low as 55 marks, a figure which leaves no profit for most furnaces. Price cutting became very general in the Rhenish-Westphalian region for some weeks. Latterly, however, it is said that some of the big concerns have shown a disposition to keep up prices. At any rate prices of Bessemer are now somewhat better than a month ago.

The break down of the Duesseldorf Syndicate, which was the principal Pig Iron organization of the country, is an event of very great significance for the entire German Iron trade. It means that for the present the greater part of the Pig Iron market will be without organization. The Siegerland Syndicate, indeed, has been succeeded by a selling agency for the works in the Siegen District. This is a small district, but it produces the higher qualities of Iron, like Spiegel-eisen and other high grades. Efforts are also making to continue the existence of the Luxemburg Syndicate, which embraces the Luxemburg and Lorraine furnaces, making chiefly the lower grades of Iron, like Gray Forge and No. 3 Foundry. According to latest reports the prospects for the prolongation of the syndicate are good. A meeting was held several days ago at which it was expected that the organization would be completed, but final action had to be deferred to a later meeting.

In any case, the Pig Iron trade of the country will not be in as favorable a position for maintaining prices as it was hitherto. It is believed in some quarters that after the old members of the Duesseldorf Syndicate have had some experience of selling Iron without the aid of a syndicate they will be quite anxious to reorganize. On the other hand, it is pointed out by persons best acquainted with the later phases of the Iron trade that the furnaces of the great mixed establishments of the Steel Syndicate will hardly participate in another organization, since those great companies are not dependent to any considerable extent upon Pig Iron as an article of sale.

#### The Stock Market Shows Confidence in the Future.

Notwithstanding the unfavorable business year that the industry has just passed through, the stock market has shown

considerable confidence in the further developments of the Iron trade. The movement of Iron shares on the German exchanges has been somewhat similar to that of American industrial stocks in Wall Street. In other words, Iron shares now average higher than at the beginning of the year. The average of 15 of the leading Iron stocks on the Berlin Exchange at the beginning of the year was 172.24, but on December 17 it was 179.15. This result means building upon the future rather than upon the immediate past. The average dividend of 13 of the largest joint stock companies in the Iron industry for the year ended June 30 was 11.89 per cent., against 13.66 per cent. for the previous year. This was a better result than they will have for this calendar year, and it is also much better than the result obtained by the smaller and independent works. The 13 works in question are all members of the Steel Syndicate.

In looking forward to 1909 the German Iron industry is not indulging in any very optimistic expectations. Some improvement is looked for, but it is not generally believed that it will amount to a complete recovery from the existing depression of trade. Among the factors that will influence the situation may be mentioned a recent vote of the Coal Syndicate to throw off 2 marks from the price of Coke, with smaller reductions on most grades of Coal. Coke prices after January 1 will be 14.50 to 16.50 marks, according to quality, against present prices of 16.50 to 18.50 marks. Another factor upon which some hopes are based is the cheapness of money, which it is believed should revive building operations next spring.

It cannot be said, however, that the trade will enter the new year in a very hopeful spirit. There are too many points at which the situation is unsatisfactory to permit of a cheerful view of 1909 prospects. Prices are too low, except where fixed by the trade organizations, and in the foreign market competition is growing sharper. So far as German producers continue selling abroad they will apparently have to do so for the most part at prices that leave little if any profit to them.

## Metal Market.

NEW YORK, January 13, 1909.

**Pig Tin.**—Trade in general has been unsatisfactory. Exaggerated rumors were current the last of the week of an exceedingly large business done on Friday and Saturday. It is true that a fair business was transacted on these days, but it was by no means as large as first reported. It is true, however, that customers are watching the market very closely, and are bare of stocks. Indications would, therefore, point to a resumption of buying should the market take on any new strength or have any favorable upturn. Buyers appear to be waiting the action of some leader, and at such a time will probably come in and buy freely. It is characteristic at this time for a seller of Tin to have numerous inquiries in the morning, and find when the business closes at the end of the day that not more than a quarter of them have been turned into orders, either by himself or other sellers. Price changes during the week have been toward lower levels, with a sharp break on Friday and Monday. Monday's price was the lowest this year, and also since early in July last year. Price changes have been as follows:

		Cents.
January 6.....	28.75	
January 7.....	28.60	
January 8.....	28.30	
January 11.....	27.90	
January 12.....	27.95	
January 13.....	28.15	

The arrivals so far this month are 1762 tons, and there are afloat for American ports 2220 tons. The London market closes about £4 lower than last week at £127 5s. for spot and £128 17s. 6d. for futures.

**Copper.**—Disappointment rules in the Copper market. Buyers have not been in evidence this year, and prices for Electrolytic are not as firm as a week ago. While it is doubtful that any selling agency would accept less than 14.25c. for 100-ton lots of Electrolytic, net cash, f.o.b. New York, it is practically certain that a sharp concession from this figure would be made were buyers willing to specify 1000 tons, say, for shipment to Europe. Reports are current that sellers other than the United Metal Sellings Company are accepting 14.12½c., cash, for European orders. These can neither be denied nor affirmed. Lake Copper is in much better position. Most, if not all, the Lake producers, excepting, perhaps, Quincy, have unsold metal for January and February delivery. These supplies are not large, however, and they feel easy. In comparison with the Electrolytic trade their present position is an enviable one, but with Lake Copper held at 14.75c., as it is now, it must shortly begin to feel the influence of the lower Electrolytic market, even if only in a sympathetic way. There is a curtailment of smelting operations in the Butte camp as the result of cold weather, but this is of practically no importance with such a large surplus of metal as there is now on hand. The London market closes to-day £1 10s. lower than last week, at £62 2s. 6d. for spot and £63 for futures. The exports so far this month are 8445 tons.

**Pig Lead.**—The market is steady. In St. Louis Lead is quoted at 4.10c. to 4.15c., dependent on deliveries. Spot Lead in New York is quoted at 4.20c. to 4.22½c., but forward deliveries are held at a premium. The American Smelting & Refining Company continues to quote shipment Lead in 50-ton lots at 4.20c.

**Spelter.**—Prices are firm. Prime Western Brands for Spot shipment are held at 5.05c., St. Louis, and 5.20c., New York. Forward deliveries are held higher in both places, some sellers quoting 5.30c. for March shipment only, but in other quarters 5.25c. is quoted.

**Antimony.**—Hallett's can be obtained at 8c. to 8.12½c., although some dealers quote it strong, at 8.12½c. Cookson's is likewise lower, at 8.25c. and 8.37½c., and Hungarian brands can be had at 8c.

**Tin Plate.**—The market is steady and prices are firm, at \$3.70, Pittsburgh, and \$3.89, New York, for 100-lb. I. C. Coke Plates.

**Old Metals.**—Business continues brisk. Choice lots of Heavy Cut and Crucible Copper have been sold at 14c. The market is surprisingly firm in the absence of any large business for Ingot Copper. Dealers' selling prices are unchanged from a fortnight ago, with the exception of a decline of 5c. in the price of Lead, which was announced last week.

	Cents.
Copper, Heavy Cut and Crucible.....	13.50 to 13.75
Copper, Heavy and Wire.....	13.25 to 13.50
Copper, Light and Bottoms.....	12.00 to 12.25
Brass, Heavy.....	9.50 to 9.75
Brass, Light.....	7.50 to 8.00
Heavy Machine Composition.....	12.75 to 13.00
Clean Brass Turnings.....	8.50 to 9.00
Composition Turnings.....	10.50 to 11.00
Lead, Heavy.....	4.10
Lead, Tea.....	3.85
Zinc Scrap.....	3.75

The statistical review of the domestic and foreign metal markets compiled by C. Mayer, secretary of the New York Metal Exchange, has just been issued. This report has been compiled with painstaking care, and is particularly complete in figures. Absolutely no editorial comment is given, the entire issue of 24 pages, 10 x 14 in., being filled with figures, their meaning explained in the fewest possible words. This makes it particularly desirable for the busy men who will use it.

## New York.

NEW YORK, January 13, 1909.

**Pig Iron.**—Interest centers chiefly in the requirements of the Pipe makers, several of whom have been negotiating for large quantities for forward delivery, but as yet have not purchased. There have been a good number of sales in moderate lots of Foundry Iron, and there is some demand for Malleable. We quote \$17.25 to \$17.50 for No. 1 Northern, \$17 to \$17.25 for No. 2 Northern Foundry, and \$16.50 to \$16.75 for No. 2 Plain, at tidewater. Alabama Irons are quoted \$17.50 to \$17.75 for No. 1 Foundry and \$17.25 to \$17.50 for No. 2 Foundry.

**Steel Rails.**—Only scattering orders are reported for the past week, the Illinois Steel Company receiving 1500 tons in small lots. Of the Pennsylvania order, placed last month, 6500 tons for the Vandalia and 22,000 tons for the Pennsylvania Company go to South Chicago. Frog and Switch business has been well maintained for some time.

**Structural Material.**—The large number of smaller building requirements still prove the mainstay of the market, while the railroad companies are making up their minds as to their needs for the coming year. The only railroad demand of note is the reappearance of the Cincinnati, New Orleans & Texas Pacific bridge over the Kentucky River, which has been replanned, and now calls for 3000 tons of Steel. In New York City a great deal of work requiring Steel is ahead, but most of it has not been started on, and the time of its taking up in earnest is not as definite as fabricators could wish. One project of note soon to come up is an addition to the New York Edison Company's power station, which will require about 12,000 tons. Among buildings on which it is expected bids will soon be asked is one for the Fidelity & Casualty Company, at Temple and Church streets. The Gracehull Apartment House is reported to have been taken by the Passaic Steel Company, which has not been actively a competitor in this way for some time. Among recent contracts are 830 tons for the Triumph Electric Mfg. Company Building, Cincinnati, taken by the Interstate Engineering Company; 1300 tons for the Prager dry goods store building in San Francisco, awarded to Milliken Brothers; 350 tons for trestles for the Columbus Iron & Steel Company, Columbus, Ohio. Projects that are up for bids include the Bettendorf Axle Company's new open hearth building, near Davenport, Iowa, 1300 tons; a building for the Richard Garrett Estate, at San Francisco, 600 tons; the new Mid-Continent Hotel, at Kansas City, 1000 tons; a bank building, at Fort Smith, Ark., 300 tons; a new bridge for the Sanitary District of Chicago, 400 tons; Cort Theater, Chicago, 400 tons; bridges for the barge canal in New York State, part of the general contract of



Whitehead & Kales Company, Detroit, 2500 tons. The contract for the Max Cohen loft building on West Twenty-seventh street, New York, is expected to be let to-day. We continue to quote plain material shipped from mill and delivered at tidewater as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

**Ferroalloys.**—Ferromanganese continues firm at \$45, Baltimore, but the demand is limited. The market for 50 per cent. Ferrosilicon is unchanged, \$65 to \$67, Pittsburgh.

**Bars.**—The market is quiet, but some good sized inquiries have made their appearance. Prices on Iron Bars range from 1.56c. to 1.60c., tidewater, and Steel Bars are held at 1.56c., tidewater.

**Plates.**—Only small lots are moving, with prices steady on Standard Sized Plates, as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The Township Committee of the Township of Union, Bergen County, N. J., will open bids January 18 at Lyndhurst, N. J., for 1750 ft. 10-in., 5000 ft. 6-in., and 8000 ft. 4-in. Pipe, Valves and Hydrants. The city of Daytona, Fla., will open bids January 25 for 1000 tons of Pipe and special castings, Valves and Hydrants, together with a gasoline engine, pump, Steel tower, tank, and appurtenances for the construction of a system of water works. General conditions are quiet, with carload lots of 6-in. quoted at \$24.50 per net ton, tidewater, for prompt delivery.

**Old Material.**—Rolling mills have been the principal buyers, taking good quantities of Wrought Scrap, Pipe, Borings and Turnings. Some Cast Scrap has also been sold. Heavy Melting Steel Scrap is a little lower, caused by the weakness in eastern Pennsylvania. Re-rolling Rails have been in rather better demand, but Relayers are more plentiful, and, as usual at this season, can be had at a little lower price than in the fall months. Quotations are as follows, New York and vicinity, per gross ton:

Old Girder and T Rails for melting.....	\$15.00 to \$15.50
Heavy Melting Steel Scrap.....	15.00 to 15.50
Old Steel Rails, re-rolling lengths.....	16.00 to 16.50
Relaying Rails.....	22.00 to 23.00
Old Iron Rails.....	20.00 to 20.50
Standard Hammered Iron Car Axles.....	22.00 to 22.50
Old Steel Car Axles.....	19.50 to 20.00
No. 1 Railroad Wrought.....	18.00 to 18.50
Iron Track Scrap.....	16.00 to 16.50
No. 1 Yard Wrought, long.....	16.50 to 17.00
No. 1 Yard, Wrought, short.....	15.50 to 16.00
Light Iron.....	10.00 to 10.50
Cast Borings.....	11.00 to 11.50
Wrought Turnings.....	12.50 to 13.00
Wrought Pipe.....	14.00 to 14.50
Old Car Wheels.....	15.00 to 15.50
No. 1 Heavy Cast, broken up.....	14.50 to 15.00
Stove Plate.....	12.50 to 13.00
Locomotive Grate Bars.....	12.50 to 13.00
Malleable Cast.....	13.50 to 14.00

## Iron and Industrial Stocks.

NEW YORK, January 13, 1909.

The course of the stock market for the past week has been somewhat uninteresting except in the case of a few of the more highly speculative stocks. Colorado Fuel had an extreme range of five points, Locomotive common, Bethlehem preferred and Ore Certificates of three points, and Pipe common of 2¼ points. The other stocks showed smaller fluctuations, with a general tendency downward. The range of prices from Thursday of last week to Monday of this week was as follows:

Allis-Chalm., com..	15 - 15¼	Railway Spr., com.	46½ - 48
Allis-Chalm., pref..	47½ - 48½	Railway Spr., pref.	101¼ - 103
Beth. Steel, com...	23½ - 25¼	Republic, com....	25 - 26¼
Beth. Steel, pref..	51 - 54	Republic, pref....	86¼ - 87½
Can, com.....	8¼ - 9	Sloss, com.....	77 - 78½
Can, pref.....	72 - 72¾	Pipe, com.....	28 - 30¼
Car & Fdry, com...	48½ - 50¼	Pipe, pref.....	74¼ - 77
Car & Fdry, pref..	109 - 109¼	Steel, com.....	51½ - 53¾
Steel Foundries.....	38¼ - 38½	Steel, pref.....	112¼ - 113¾
Colorado Fuel.....	40¼ - 45½	West. Electric.....	84 - 86
Gen. Electric.....	154¼ - 157	Chl. Pnen. Tool....	28 - 28¾
Gr. N. ore cert....	70 - 73	Am. Ship, com.....	58½ - 59
Int. Harv., com....	64	Am. Ship, pref.....	105
Int. Harv., pref..	109¼ - 110	Cambria Steel.....	38¼ - 39¼
Locomotive, com...	55½ - 58¼	L. S. Corp.....	15 - 16
Locomotive, pref..	111 - 112	Penna. Steel, pref.	103¼ - 104
Nat. En. & St., com.	14 - 14¼	Warw. I. & S., com.	7½ - 8¼
Nat. En. & St., pref.	83	Cruc. St., com....	8 - 8¼
Pressed St., com...	41½ - 43	Cruc. St., pref....	56¼ - 58¾
Pressed St., pref..	102	Harb.-Walker Ref.	17½ - 18½

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 51½, preferred 112¼; Car & Foundry common 48, preferred 109¼; Locomotive common 55¼, preferred 110½; Colorado Fuel 40¼; Pressed Steel common 40½, preferred 101; Railway Spring common 46½; Republic common 24¼, preferred 86; Sloss-Sheffield common 78; Cast Iron Pipe common 29, preferred 75¼; Can common 8, preferred 72¼.

**Dividends.**—The International Steam Pump Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable February 1.

## The West Penn Steel Company.

The West Penn Steel Company, Pittsburgh, which was incorporated recently under a New Jersey charter, with a capitalization of \$700,000, has perfected its organization with the following officers: John W. Burdick, president; John McGinley, vice-president and general manager; Arthur L. Over, secretary and treasurer.

Some time ago the company purchased 13 acres at Brackenridge, Pa., on the West Penn Division of the Pennsylvania Railroad, on which it will now erect a plant for the manufacture of open hearth steel billets, sheet bars and sheets for electrical and stamping purposes. Contracts for the buildings and equipment, shortly to be placed, will cover an open hearth and bar building 75 x 368 ft., having a crane with a 72-ft. extension into the yard, and equipped with one 80-ton furnace, one three-high 30-in. bar mill with soaking pits, engine, &c., two 15-ton electric traveling cranes with 5-ton auxiliaries; one building, 80 x 312 ft., with a 50-ft. lean-to to contain three sheet mills, two stands of cold rolls and engine, one 20 and one 5 ton electric crane; one 42 x 48 ft. power house to contain 300-kw. electric equipment; one 42 x 48 ft. boiler house with 1400-hp. boilers, and smaller buildings for laboratory, carpenter and blacksmith shop.

It is proposed to have a modern plant throughout with a capacity of 3200 gross tons of ingots, 2900 gross tons of bars and 900 net tons of sheet steel per month. The arrangement of the plant provides for the addition of sheet steel mills as needed from time to time to increase the conversion of bars into sheets without additional power until, as trade requirements warrant, the sheet capacity can be expanded to 1800 tons per month. It is expected that the plant will be finished ready for operations by October 1 next.

The business failures in the United States in 1908, as reported by *Bradstreet's*, were 14,066, an increase of 37 per cent. over 1907 and of 49 per cent. over 1906. The last named year had the smallest number of failures in a generation. The liabilities for 1908 were \$296,486,169, a decrease of 20 per cent. from 1907, but a sum nearly two and one-half times the liabilities of 1906, which were \$123,827,957. The failures in Canada and Newfoundland numbered 1714 in 1908, against 1365 in 1907 and 1239 in 1906. The Canadian liabilities last year were \$17,586,344, against \$11,703,834 and \$9,596,393 in 1907 and 1906, respectively.

A meeting of all of the branch managers of Rogers, Brown & Co. will be held January 14 and 15 at the headquarters of the firm in the Corn Exchange Bank Building, Chicago. These meetings, which have been held annually heretofore, will, because of the benefit to be derived from more frequent conference, be held quarterly hereafter. A general meeting, which will include the salesmen as well as the office managers, will take place at Cincinnati later in the season.

The Best Mfg. Company, Pittsburgh, has the contract for the piping equipment, including the drying, steam and exhaust lines, for the new Gayley dry blast being installed at the furnaces of the Toledo Furnace Company, Toledo, Ohio, for which Julian Kennedy of Pittsburgh is engineer. This is a similar installation to that at the Isabella Furnaces of the Carnegie Steel Company, also put in by the Best Company.

President Miller of the Southern Supply and Machinery Dealers' Association, has called a meeting of the Executive Committee in the Grunewald Hotel, New Orleans, La., for February 4, at 10 o'clock a. m. At this meeting the selection of the place for holding the next convention will be passed upon.



## A Study of Living Conditions Among Pittsburgh Steel Workers.

Under the name of the Pittsburgh Survey, the Charities Publication Committee representing the Charity Organization Society of the City of New York, 104 East Twenty-second street, has brought out the first installment of a noteworthy series of articles. It is published in the current issue of the magazine, *Charities and the Commons*, in which it takes up 110 pages in addition to inserts containing illustrations. The special number before us is devoted to "The People." The second installment will take up "The Place," and the third will deal with "The Work." In the introductory chapter the method of conducting the investigation is thus described:

The Pittsburgh Survey has been a rapid, close range investigation of living conditions in the Pennsylvania steel district. It has been carried on by a special staff organized under the national publication committee which prints this magazine. It has been financed chiefly by three grants of moderate amount from the Russell Sage Foundation for the Improvement of Living Conditions. It has been made practicable by co-operation from two quarters—from a remarkable group of leaders and organizations in social and sanitary movements in different parts of the United States, who entered upon the field work as a piece of national good citizenship; and from men, women and organizations in Pittsburgh who were large-minded enough to regard their local situation as not private and peculiar, but a part of the American problem of city building.

### Scope of the Pittsburgh Investigation.

The main work was started in September, 1907, when a company of men and women of established reputation as students of social and industrial problems spent the month in Pittsburgh. As the result of their inquiry a series of specialized investigations was taken up along a few of the lines which promised significant results. The inquiries have dealt with the wage earners of the Pittsburgh District in their relation to the community as a whole and in their relation to industry. Under the former head a study has been made of the genesis and racial makeup of the population, its physical setting and its social institutions; under the latter, the investigators have taken up the general labor situation; hours, wages and labor control in the steel industry; child labor, industrial education, women in industry, cost of living and industrial accidents.

Iron and steel manufacturers and all connected with the industry will find much of interest in the first chapters of these reports. Paul U. Kellogg, director of the Pittsburgh Survey, writes the introductory chapter indicating the lines followed in the investigation. It is able, broadminded and shows how significant are the problems growing out of the influx of foreign races to the great center of the steel industry. The other chapter titles are the following: "Pittsburgh—An Interpretation of Its Growth," by Robert A. Woods; "New Pittsburghers," by Peter Roberts; "Some Pittsburgh Steel Workers," by John Andrews Fitch; "The Temper of the Workers Under Trial," by Crystal Eastman; "Homestead—A Steel Town and Its People," by Margaret F. Byington. Four other chapters relate to social conditions among various classes of Pittsburgh workers.

One fact of importance to which attention is called in Mr. Kellogg's opening chapter is that in Pittsburgh is a stupendous example of the influence upon the wage earners' city of the combination in one corporation of all processes from the ore to the completed bridge. "This unification of so large a part of the steel industry has also become no small factor in the solution of some of the several problems which the Pittsburgh Survey brings before us so graphically. The work of the United States Steel Corporation and of other large interests in the direction of reducing the number of steel works accidents and mitigating the consequences of these misfortunes represents an advance over what was done in these regards in the days of small, unrelated companies.

Naturally what the authors of these Pittsburgh articles present to us is written from the standpoint of philanthropy and human interest. But it is not by that sign to be regarded as outside the pale of the practical. It has a tremendous economic bearing. The editor of the Pittsburgh Survey rightly intimates that the men re-

sponsible for results in the steel industry need to study the life of the labor employed in the industry if they would keep the country's labor force at the point of highest efficiency and help "democracy to keep pace with industrialism." The raising of the conditions of life in mill towns is enlisting more attention than ever, and the present series of articles will furnish a new stimulus to the efforts of presidents and managers of the large companies. One subject to which particular attention is given in the Pittsburgh Survey is that of accidents in industrial works.

### A View of Homestead Life.

Something of the point of view of the chapter on Homestead is indicated by the following extract:

The chief obstacle to the development of amusements is, doubtless, the hours and nature of mill work. Every other week the men work on night turn. Then they get home early in the morning and are ready, right after breakfast, for the much needed sleep; at four o'clock in the afternoon they must be called, and after an early supper they are off to the mill for the long night. That week there is no chance for outside festivities, nor chance even for the family to have quiet evenings together. Sometimes when sons who are also in the mill are on the opposite shift, the family is not able to meet even for meals. This irregularity not only tends to break into the family life, but also, by making regular engagements impossible, lessens the interest in outside things. Even when the men are on day turn and are through work at half-past five, the 10 hr. of heavy labor in the mill leave them little ambition to seek out amusements. The exhausting nature of the work, coupled with the lack of sleep due to this constant change of habits, makes them weary enough, as they show by the slow steps and bent shoulders of the homeward procession. Change of thought and genuine relaxation are, nevertheless, a necessity, if the men are to maintain even mere physical efficiency.

The spirit of the mill is the spirit of work. We have found that the town itself provides for the men little opportunity for genuine relaxation after the strain of the day's work; and when we turn to the town again, seeking whether it offers any stimulus to mental activity, we find in it the same failure to help in the development of a normal life. There is the Carnegie Library, to be sure, which has classes in metallurgy, and provides expensive periodicals dealing with the steel trade as well as general reading matter. But as many a man said to me, "Oh, what's the use of a library when a man works 12 hr. a day."

Although efforts toward a reorganization of the union are practically at an end, because of the opposition of the mill officials, there is earnest thinking going on among some of the men about the great corporations which controls wages and hours, and so much of the rest of life as is dependent upon them. One man, who during the recent hard times was not earning enough to pay his rent, said, "I don't blame the superintendent here for our being out of work, but the men in New York could help it, only they don't know or don't care what a cut in wages means to us." That the change in wage scale or the decision to work but half time last winter, which came to them without explanation, were related to an industrial depression which affected a whole continent, was but dimly understood. They knew of dividends, and they knew of wage-cuts. With the feeling that they are impotent to change conditions, some of the more thoughtful men are turning to Socialism for the larger solution it seems to offer.

### The Spirit of Unionism.

An 8-hr. day and a restriction of the immigration which has brought so many thousands of Slavs into the steel works at Pittsburgh are two of the things which the investigators find are uppermost in the thought of many of the more intelligent workers. In the chapter on "Some Pittsburgh Workers" this occurs:

Unionism is not entirely dead in the mill towns; at least the spirit of it is to be found among the men, though the form is absent. Some of them expect to see an organization in the mills again. Others have given up hope of gaining shorter hours or higher wages through collective bargaining, and are looking for Government interference and a legal eight-hour day. There is considerable variety of opinion as to how this is to be brought about. Pittsburgh steel workers are traditionally Republican in politics; Speaker Cannon himself does not fear "tinkering" with the tariff more than they. The majority of them have been hoping that their representatives would get time after a while to consider and pass the labor legislation that the workingmen desire. However, there has been much loss of faith in the last few years.

Referring to the higher class workmen with whom he mingled, the writer of the chapter quoted from above says: "It is highly significant that there are such men as these in the Pittsburgh mills. In a discussion of the labor problem in the steel industry, it must be borne in mind that these men are more than workers; they are thinkers, too, and must be reckoned with."

## The Machinery Trade.

NEW YORK, January 13, 1909.

Since the first of the year the demand for machinery has not come up to the expectations of those who had been practically promised considerable miscellaneous business. Last month certain houses were sure of the closing of a number of fair sized orders shortly after the opening of the new year, but thus far a great majority of these have failed to materialize. Possibly it is too early to expect much of a forward movement and perhaps no discouragement should be felt on account of the slackness of trade, but certainly the little business offered the past week was not encouraging. Aside from an important interest which has closed a good sized order for machinery equipment for its Alaska project, nothing in the way of inquiries or orders of any size were reported from either the leading industrial corporations or the railroads. While no immediate requirements of magnitude are reported, a number of new enterprises have lately come forward which should lead to important purchases at an early date. Among these the railroads figure to some extent. In addition to the two systems already mentioned, it is said that the Long Island Railroad is preparing to buy some tools. In view of the intention to enlarge its zone of electrification, it will not be surprising to hear of requirements of considerable size to take care of the increase of electrical equipment.

There are many machinery manufacturers who use steel castings and who do not own their own foundries whose practice has been to make a yearly contract in January with a steel founder for a set number of castings to be delivered during the year, with a proviso that they have the privilege of ordering more at the same price. During January of 1908 steel founders were in many cases unable to get such contracts renewed, their customers stating that they would prefer to take their chance on getting deliveries as they needed them at the regular market price. That there is more confidence in the business situation now than there was a year ago is indicated by the fact that steel founders as a rule have met with better success in respect to making such contracts, and many machinery manufacturers have expressed their confidence in the outlook for future business by placing contracts for castings extending over a year, while others have made inquiries and show a disposition to go further with their negotiations. This state of affairs is particularly advantageous to the steel founders as they are able to look forward to a stated amount of business at least, while a year ago many of them did not know more than four or five weeks ahead whether they would be able to keep their plants busy or not.

### American Locomotive Company's Proposed Plant at Gary.

Official announcement has been made by the American Locomotive Company that property has been purchased at Gary, Ind., for the erection of one of the largest and most complete locomotive works in the world. Just how large the plant will be has not been entirely determined, and this means that as yet no arrangements have been made for the structural work nor has anything been done toward purchasing machinery; so the trade will hear, it is expected, before the year is out of one of the largest lists of machinery that they have been given an opportunity to bid on for some time past. The land at Gary, which has been purchased from the Gary Land Company, a subsidiary of the United States Steel Corporation, is 130 acres in extent, and it is just twice as large as that occupied by the largest of the American Locomotive Company's present plants. It is roughly estimated by the company that from 12,000 to 15,000 workmen will be employed in the new works, and the general plans for the buildings are now being prepared. The plant will be erected adjoining that of the new plant of the United States Steel Corporation, and in addition to the advantages of getting quick delivery and cheaper material from the steel plant, the new locomotive works will have the benefit of being in the center of a territory where the largest number of railroads converge to a single commercial center. In fact, this new plant will be designed with the idea of furnishing the needs of the Western railroads converging at Chicago, as at the present time the company has no large locomotive plant west of Pittsburgh. The location in the Chicago District naturally provides additional locomotive building capacity where it is most needed for a prompt and direct delivery to a large number of railroads. The plant will be built large enough, it is stated, to provide liberally for the growing requirements from that territory for a number of years to come. The American Locomotive Company has been kept fairly busy of late at its other plants, those at Pittsburgh having been kept at work for some time on the construction of a large number of small locomotives and the Richmond plant being particularly busy with repair work. The works at Schenectady, which fell off at the beginning of the business depression, has been kept up to the standard

during the last four months, and the other plants are well supplied with work, with the possible exception of the Montreal and Paterson plants. The latter plant has been idle for some time, chiefly because it was somewhat old fashioned, although it has the advantage of having a very complete erecting shop, and the locomotive company has been investigating conditions there with a view to converting it into a plant for the manufacture of steam plows, dredges, derricks, steam shovels and other specialties. The company's engineers have been going over the ground investigating the adaptability of the plant for that purpose, and it is said in the trade that they have given favorable reports which may soon be acted upon.

The receivers of the Norfolk & Southern Railroad have been authorized by the court to issue \$1,000,000 worth of receivers' certificates, the proceeds from the sale of which are to be used for improvements to the system. Of this amount it is understood that \$65,000 will be used for additional equipment, &c., for the machine shop at New Bern, N. C.

An important deal for mechanical equipment which has been under way for some time was finally closed the past week by the Katalla Company, one of the Guggenheim interests. The order was one of the largest reported in some time for air compressors and was placed with the Chicago Pneumatic Tool Company, New York. The Guggenheims have recently purchased several hundred thousand dollars' worth of material for their operations in Alaska, and the air compressors are to be used for work in connection with the bridge to be constructed over the Copper River. There are five large compressors included in the order, four of which are to be used for caisson work and one for furnishing air for the pneumatic tools.

The Automatic Transportation Company, Buffalo, N. Y., W. C. Carr, president, has purchased 4½ acres of ground at Main street and the Erie Railroad, and will build an extensive plant upon the site. At present, however, only a machine shop, 60 x 200 ft., two stories, of brick or reinforced concrete, and an office building will be erected. A foundry and other buildings will be erected later. For the present the company will purchase its rails, supporting columns and motors, manufacturing only the automatic carriers used on its lines, which are planned for automatic delivery and collection of freight, express and mail matter in rural and mining districts. Considerable iron working machinery will be installed in the new plant.

The City Council of East Point, Ga., will receive bids until January 19 for one 150-hp. boiler and stack, two 750,000-gal. compound duplex pumps, one boiler feed pump, one 125-hp. direct connected four-valve engine, one air compressor and receiver, one 100-kw. alternating current generator, direct connected, switchboards, 700 tons of cast iron pipe and special castings, pumping station and other work.

The Board of Public Works of Daytona, Fla., will receive bids until January 25 for a 1,100,000-gal. power pump and engine, steel tank and tower, and a large quantity of cast iron pipe and special castings.

The Central City Refrigerating Company, 329 Kirk Building, Syracuse, N. Y., is asking for bids on the steel work for a six-story building 120 x 300 ft. which it will erect at West Fayette and West streets. The building will be used for cold storage, offices, light manufacturing and stores equipped with refrigerators and refrigerating coils furnished from the central plant. Bids will be called for in a couple of weeks covering a gas producer plant with a capacity of generating gas to furnish 600 to 800 hp., also for two gas engine driven refrigerating machines having daily capacity of 150 tons each, carrier system for conveying ice and a large amount of sheet metal work in connection with tanks for icemaking.

### Business Changes.

The offices of Schuchardt & Schutte, importers and exporters of machinery, will be moved January 15 from 136 Liberty street to the West Street Building. The company will occupy store front space on the Albany street side, which will be used as a showroom and selling room and accounting rooms, and other offices will be located directly above on the next floor.

The business heretofore carried on by the American Engineering Specialty Company, with headquarters at Chicago and branches and agents in various cities throughout the Middle West, is now conducted under the name of Warren Webster & Co., with main office and works at Camden, N. J. This change will give to users of the feed water heaters and purifiers, steam and oil separators, air washers and humidifiers and other steam specialties the full advantages of the Webster organization, which now covers all parts of the country.

The business of N. D. Yant & Co., contracting engineers in iron and steel, Pittsburgh, will be conducted hereafter under the name of the Independent Bridge Company, they having incorporated under this title.



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### A View of Homestead Life.

Something of the point of view of the chapter on Homestead is indicated by the following extract:

The chief obstacle to the development of amusements is, doubtless, the hours and nature of mill work. Every other week the men work on night turn. Then they get home early in the morning and are ready, right after breakfast, for the much needed sleep; at four o'clock in the afternoon they must be called, and after an early supper they are off to the mill for the long night. That week there is no chance for outside festivities, nor chance even for the family to have quiet evenings together. Sometimes when sons who are also in the mill are on the opposite shift, the family is not able to meet even for meals. This irregularity not only tends to break into the family life, but also, by making regular engagements impossible, lessens the interest in outside things. Even when the men are on day turn and are through work at half-past five, the 10 hr. of heavy labor in the mill leave them little ambition to seek out amusements. The exhausting nature of the work, coupled with the lack of sleep due to this constant change of habits, makes them weary enough, as they show by the slow steps and bent shoulders of the homeward procession. Change of thought and genuine relaxation are, nevertheless, a necessity, if the men are to maintain even mere physical efficiency.

The spirit of the mill is the spirit of work. We have found that the town itself provides for the men little opportunity for genuine relaxation after the strain of the day's work; and when we turn to the town again, seeking whether it offers any stimulus to mental activity, we find in it the same failure to help in the development of a normal life. There is the Carnegie Library, to be sure, which has classes in metallurgy, and provides expensive periodicals dealing with the steel trade as well as general reading matter. But as many a man said to me, "Oh, what's the use of a library when a man works 12 hr. a day."

Although efforts toward a reorganization of the union are practically at an end, because of the opposition of the mill officials, there is earnest thinking going on among some of the men about the great corporations which control wages and hours, and so much of the rest of life as is dependent upon them. One man, who during the recent hard times was not earning enough to pay his rent, said, "I don't blame the superintendent here for our being out of work, but the men in New York could help it, only they don't know or don't care what a cut in wages means to us." That the change in wage scale or the decision to work but half time last winter, which came to them without explanation, were related to an industrial depression which affected a whole continent, was but dimly understood. They knew of dividends, and they knew of wage-cuts. With the feeling that they are impotent to change conditions, some of the more thoughtful men are turning to Socialism for the larger solution it seems to offer.

### The Spirit of Unionism.

An 8-hr. day and a restriction of the immigration which has brought so many thousands of Slavs into the steel works at Pittsburgh are two of the things which the investigators find are uppermost in the thought of many of the more intelligent workers. In the chapter on "Some Pittsburgh Workers" this occurs:

Unionism is not entirely dead in the mill towns; at least the spirit of it is to be found among the men, though the form is absent. Some of them expect to see an organization in the mills again. Others have given up hope of gaining shorter hours or higher wages through collective bargaining, and are looking for Government interference and a legal eight-hour day. There is considerable variety of opinion as to how this is to be brought about. Pittsburgh steel workers are traditionally Republican in politics; Speaker Cannon himself does not fear "tinkering" with the tariff more than they. The majority of them have been hoping that their representatives would get time after a while to consider and pass the labor legislation that the workmen desire. However, there has been much loss of faith in the last few years.

Referring to the higher class workmen with whom he mingled, the writer of the chapter quoted from above says: "It is highly significant that there are such men as these in the Pittsburgh mills. In a discussion of the labor problem in the steel industry, it must be borne in mind that these men are more than workers; they are thinkers, too, and must be reckoned with."



## The Machinery Trade.

NEW YORK, January 13, 1909.

Since the first of the year the demand for machinery has not come up to the expectations of those who had been practically promised considerable miscellaneous business. Last month certain houses were sure of the closing of a number of fair sized orders shortly after the opening of the new year, but thus far a great majority of these have failed to materialize. Possibly it is too early to expect much of a forward movement and perhaps no discouragement should be felt on account of the slackness of trade, but certainly the little business offered the past week was not encouraging. Aside from an important interest which has closed a good sized order for machinery equipment for its Alaska project, nothing in the way of inquiries or orders of any size were reported from either the leading industrial corporations or the railroads. While no immediate requirements of magnitude are reported, a number of new enterprises have lately come forward which should lead to important purchases at an early date. Among these the railroads figure to some extent. In addition to the two systems already mentioned, it is said that the Long Island Railroad is preparing to buy some tools. In view of the intention to enlarge its zone of electrification, it will not be surprising to hear of requirements of considerable size to take care of the increase of electrical equipment.

There are many machinery manufacturers who use steel castings and who do not own their own foundries whose practice has been to make a yearly contract in January with a steel founder for a set number of castings to be delivered during the year, with a proviso that they have the privilege of ordering more at the same price. During January of 1908 steel founders were in many cases unable to get such contracts renewed, their customers stating that they would prefer to take their chance on getting deliveries as they needed them at the regular market price. That there is more confidence in the business situation now than there was a year ago is indicated by the fact that steel founders as a rule have met with better success in respect to making such contracts, and many machinery manufacturers have expressed their confidence in the outlook for future business by placing contracts for castings extending over a year, while others have made inquiries and show a disposition to go further with their negotiations. This state of affairs is particularly advantageous to the steel founders as they are able to look forward to a stated amount of business at least, while a year ago many of them did not know more than four or five weeks ahead whether they would be able to keep their plants busy or not.

### American Locomotive Company's Proposed Plant at Gary.

Official announcement has been made by the American Locomotive Company that property has been purchased at Gary, Ind., for the erection of one of the largest and most complete locomotive works in the world. Just how large the plant will be has not been entirely determined, and this means that as yet no arrangements have been made for the structural work nor has anything been done toward purchasing machinery; so the trade will hear, it is expected, before the year is out of one of the largest lists of machinery that they have been given an opportunity to bid on for some time past. The land at Gary, which has been purchased from the Gary Land Company, a subsidiary of the United States Steel Corporation, is 130 acres in extent, and it is just twice as large as that occupied by the largest of the American Locomotive Company's present plants. It is roughly estimated by the company that from 12,000 to 15,000 workmen will be employed in the new works, and the general plans for the buildings are now being prepared. The plant will be erected adjoining that of the new plant of the United States Steel Corporation, and in addition to the advantages of getting quick delivery and cheaper material from the steel plant, the new locomotive works will have the benefit of being in the center of a territory where the largest number of railroads converge to a single commercial center. In fact, this new plant will be designed with the idea of furnishing the needs of the Western railroads converging at Chicago, as at the present time the company has no large locomotive plant west of Pittsburgh. The location in the Chicago District naturally provides additional locomotive building capacity where it is most needed for a prompt and direct delivery to a large number of railroads. The plant will be built large enough, it is stated, to provide liberally for the growing requirements from that territory for a number of years to come. The American Locomotive Company has been kept fairly busy of late at its other plants, those at Pittsburgh having been kept at work for some time on the construction of a large number of small locomotives and the Richmond plant being particularly busy with repair work. The works at Schenectady, which fell off at the beginning of the business depression, has been kept up to the standard

during the last four months, and the other plants are well supplied with work, with the possible exception of the Montreal and Paterson plants. The latter plant has been idle for some time, chiefly because it was somewhat old fashioned, although it has the advantage of having a very complete erecting shop, and the locomotive company has been investigating conditions there with a view to converting it into a plant for the manufacture of steam plows, dredges, derricks, steam shovels and other specialties. The company's engineers have been going over the ground investigating the adaptability of the plant for that purpose, and it is said in the trade that they have given favorable reports which may soon be acted upon.

The receivers of the Norfolk & Southern Railroad have been authorized by the court to issue \$1,000,000 worth of receivers' certificates, the proceeds from the sale of which are to be used for improvements to the system. Of this amount it is understood that \$65,000 will be used for additional equipment, &c., for the machine shop at New Bern, N. C.

An important deal for mechanical equipment which has been under way for some time was finally closed the past week by the Katalla Company, one of the Guggenheim interests. The order was one of the largest reported in some time for air compressors and was placed with the Chicago Pneumatic Tool Company, New York. The Guggenheims have recently purchased several hundred thousand dollars' worth of material for their operations in Alaska, and the air compressors are to be used for work in connection with the bridge to be constructed over the Copper River. There are five large compressors included in the order, four of which are to be used for caisson work and one for furnishing air for the pneumatic tools.

The Automatic Transportation Company, Buffalo, N. Y., W. C. Carr, president, has purchased 4½ acres of ground at Main street and the Erie Railroad, and will build an extensive plant upon the site. At present, however, only a machine shop, 60 x 200 ft., two stories, of brick or reinforced concrete, and an office building will be erected. A foundry and other buildings will be erected later. For the present the company will purchase its rails, supporting columns and motors, manufacturing only the automatic carriers used on its lines, which are planned for automatic delivery and collection of freight, express and mail matter in rural and mining districts. Considerable iron working machinery will be installed in the new plant.

The City Council of East Point, Ga., will receive bids until January 19 for one 150-hp. boiler and stack, two 750,000-gal. compound duplex pumps, one boiler feed pump, one 125-hp. direct connected four-valve engine, one air compressor and receiver, one 100-kw. alternating current generator, direct connected, switchboards, 700 tons of cast iron pipe and special castings, pumping station and other work.

The Board of Public Works of Daytona, Fla., will receive bids until January 25 for a 1,100,000-gal. power pump and engine, steel tank and tower, and a large quantity of cast iron pipe and special castings.

The Central City Refrigerating Company, 329 Kirk Building, Syracuse, N. Y., is asking for bids on the steel work for a six-story building 120 x 300 ft. which it will erect at West Fayette and West streets. The building will be used for cold storage, offices, light manufacturing and stores equipped with refrigerators and refrigerating coils furnished from the central plant. Bids will be called for in a couple of weeks covering a gas producer plant with a capacity of generating gas to furnish 600 to 800 hp., also for two gas engine driven refrigerating machines having daily capacity of 150 tons each, carrier system for conveying ice and a large amount of sheet metal work in connection with tanks for icemaking.

### Business Changes.

The offices of Schuchardt & Schutte, importers and exporters of machinery, will be moved January 15 from 136 Liberty street to the West Street Building. The company will occupy store front space on the Albany street side, which will be used as a showroom and selling room and accounting rooms, and other offices will be located directly above on the next floor.

The business heretofore carried on by the American Engineering Specialty Company, with headquarters at Chicago and branches and agents in various cities throughout the Middle West, is now conducted under the name of Warren Webster & Co., with main office and works at Camden, N. J. This change will give to users of the feed water heaters and purifiers, steam and oil separators, air washers and humidifiers and other steam specialties the full advantages of the Webster organization, which now covers all parts of the country.

The business of N. D. Yant & Co., contracting engineers in iron and steel, Pittsburgh, will be conducted hereafter under the name of the Independent Bridge Company, they having incorporated under this title.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., January 12, 1909.

Data regarding the actual volume of the past year's business transacted by local machine tool manufacturers and merchants not yet being available, it is impossible to fix the exact percentage of the falling off. It appears safe to say that the volume will not exceed 50 per cent. of that of the previous year. We entered the year 1908 with trade in a very unsatisfactory condition, the effect of the panic of the previous fall being in full force, but it was hoped that as the financial atmosphere cleared an improvement would come in the demand. The betterment, however, was slow in developing, and it was well along in the year before any activity was shown, and then little beyond buying in small quantities developed.

Owing to the generally depressed condition of business, the machine tool trade probably felt its effects to a greater extent than other lines. It has been a long time since this interest experienced such a sustained depression. It was gratifying to note the firmness with which the situation was met. Heavy losses were prevented by the very conservative methods employed. Operating as well as overhead expenses were reduced to the minimum, and every effort to keep costs at the lowest possible point was made by both manufacturers and merchants. As the year advanced and orders carried over from 1907 were gradually filled, manufacturers reduced their working forces. Entire departments in some works were closed down and remained idle for long periods, in others only a sufficient force to maintain an organization was employed. In many cases plants were operated on a basis of not much over 25 per cent. of their capacity for months at a time.

### The Export Trade.

Conditions abroad having been about as dull as in this country, the volume of foreign business transacted showed a decline as compared with 1907. Manufacturers of the usually termed standard lines of tools found a very small market abroad, and tool builders received but a small proportion of the orders placed. Special tool builders booked a somewhat better business, but at no time was the volume equal to that done the previous year. The demand for power transmission specialties showed a material falling off. Orders were plentiful for such equipment as pulleys, hangers, &c., in some instances equal to former years, but individually they were small, foreign agents carrying but meager stocks and ordering in small quantities only.

### The Machine Tool Trade.

The year was practically bare of transactions of any material size, business in nearly every case being individually small. More attention has been given prospective purchasers than ever before, but unless the buyer was in actual need of the equipment hardly any inducement which could be brought to bear on the subject would bring about a sale. Merchants probably never had greater stocks on hand than during 1908. Manufacturers completed agents' stock orders early in the year, but dealers' warehouses and floors were so filled that they were frequently unable to take in the tools, and it was midyear and even beyond in many cases before such deliveries were completed, and late in the year before further orders in any quantity again came from the dealers.

Heavy machine tools were not bought freely. The large industrial plants, having less than 50 per cent. of their capacity in operation, were but meager buyers, and, with the probable exception of some classes of lathes and special tools, a very material falling off in business was noted. In the smaller lines of tools, manufacturers, whose stocks had been depleted in former years, made a fair supply of stock tools before curtailing extensively, but as the year advanced, with no corresponding increase in the demand, sharp curtailment was necessary, so that for long periods at a time production was close to 25 per cent. of productive capacity.

Dealers had a rather unsatisfactory year. Conditions directly contrary to those of 1907 were experienced in almost every case. While during that year stocks were low, deliveries hard to get and premiums being paid for early shipments, stocks the past year were usually beyond the capacities of their floors and warehouses and immediate deliveries could have been obtained on all classes of standard tools, but purchasers were lacking, and it was not until late in the year that stocks on floors reached proportions nearer the normal.

### Second Hand Machine Tools.

At times the volume of business in this line was materially greater than that done in new tools, owing to the fact that buyers, studying extreme retrenchment, frequently turned to the less expensive second-hand tools. Finding this such a general practice, a number of the local merchants who had not done much in the second-hand machinery entered that field rather aggressively. Deliveries on practically

every class of equipment could be had quite freely, and frequently tools in exceptionally good condition were to be obtained.

### Boilers and Engines.

The boiler and engine trade followed the trend of business generally. The heavy engine builders carried over a good share of work from the previous year, and did not feel the effect of the depressed conditions as did the manufacturers of smaller engines early in the year. Later, however, they felt the full force of the depression, and they had recovered but little up to the close of the period under review. The falling off in industrial activity in almost every direction was keenly felt by this branch of the trade. The lack of building work and the development of so few projects requiring power installations were quite noticeable throughout the year. The development of gas and gasoline engines, which is continually running to the higher powers, has also been a factor in the trade, although the volume of business in these lines also showed a material decline. The use of electrical power supplied from central stations has also increased, thereby diminishing sales to some extent of the smaller engine and boiler installations. In this branch of the trade the outlook for the coming year is believed to be better, several large power installations being before the trade and the number of smaller propositions under consideration increasing.

### Locomotives.

Locomotive building has been at the lowest point for many years. Railroad buying has been very light, while the reduced operations at industrial plants resulted in little business of that character being placed. Occasionally some few orders have developed for export, but even this class of business has been below the average. The local locomotive plant, which had reduced its working forces early in the year about 25 per cent., cutting off practically all night work and going on an eight hour day, was forced as the year advanced to make further curtailments. About midyear operations were at the low point. Reductions in the number of employees from time to time brought the total down to 4500, representing but 25 per cent. of those employed a year before. Even these worked only on a five hour a day basis.

Conditions improved somewhat the latter portion of the year, but there was not sufficient work received to enable an increase in the working force, which for the last half of the year ran from 4500 to 5000, although some departments went on somewhat longer working hours. Both the Pennsylvania and the Reading railroads show greater activity in their own locomotive shops and, while the development of new orders from the railroads generally will be slow, a fair volume of business is anticipated this year.

### Shipbuilding.

Business has been somewhat irregular. The shipyards have been only moderately active. Several of the Delaware River yards booked some good contracts toward the close of the year, including a battleship, a collier, and a number of smaller Government vessels. But a small amount of new work has developed in merchant vessels. While there is no great quantity of new business in immediate prospect, there is enough work on hand to keep plants fairly active for a considerable time.

### Prices.

Prices of machinery and tools showed remarkable firmness under the trying conditions experienced. The better class of tools showed no recession in prices. Manufacturers were burdened with increased costs, owing to decreased production, and in some of the higher classes of equipment slight advances were to be noted. It was evident early in the year that it was not a question of cost which governed the purchase of a tool, but the actual necessity for it. Frequently merchants made concessions of small amounts to clean up stocks on hand, but nearly always on the medium and lower grades of tools. The absence of large deals during the year may have been somewhat responsible for the maintenance of prices, as it is in this class of business that sellers are more willing to make concessions, the single tool trade, such as has characterized the market so fully during this year, not being conducive to much price cutting.

### Improvements to Plants.

Very little in the way of extensive improvements to plants has been done in this territory. With industrial establishments, machine tool and general manufacturing plants running on an average basis of 50 per cent. of their capacity, little incentive to expand was offered. In nearly every plant there was a large percentage of idle equipment, and projects covering extensions of any importance were largely held in abeyance. In a number of cases propositions under way early in the year were carried to completion, but usually work was suspended and orders for equipment which had been placed were freely countermanded. Considerable improvement in the direction of blast furnace construction, which interests particularly the heavy engine builders, is under way.



**The Outlook for 1909.**

The trade generally takes a hopeful view of the situation regarding business during the coming year. While developments will probably continue to be slow, it is confidently believed that conditions are ripe for a decided betterment in the near future. The railroads which bought so sparingly in 1908 are expected to come in the market more freely, which should help the trade indirectly. Work in the way of new shops is also under consideration by several roads, and while industrial plants generally are not actively engaged, there has been a slight movement in the right direction, although it is well understood that until they themselves become actively engaged, the machine tool trade can hardly expect them to become extensive purchasers of machinery. Tariff agitation will probably hold business back in some directions for a time, but projects which were held in abeyance last year are again coming up for consideration.

**The Week.**

The market during the past week was a little more active than its predecessor. Buying, however, continues along rather narrow lines, the trade not having as yet completed the detail work connected with the annual stock taking, &c. There is a somewhat better inquiry, but still largely confined to single tool propositions. No change has occurred regarding the operation of tool builders' plants, although in some industrial lines a trifle greater activity is to be noted.

The second-hand machine tool market shows practically no change. The demand for second-hand engines and boilers has been rather dull, although more activity has been shown in new equipment, particularly boilers of the medium capacity. A number of industrial plants have not yet resumed operations since the holidays, but a pretty general resumption is expected the current week.

Gould & Eberhardt, Newark, N. J., manufacturers of automatic gear cutting machinery, announce that after February 1 they will be represented in Philadelphia and the surrounding territory by the W. E. Shipley Machinery Company, the Bourse, Philadelphia, instead of the Fairbanks Company, as formerly.

**Chicago Machinery Market.**

CHICAGO, ILL., January 12, 1909.

After a relatively active movement through the greater part of December, the demand for machine tools has dropped back into another of the recurrent periods of dullness, which for the past year or more have marked the undulating course of business. Hopes of a permanent advance inspired by this movement are again disappointed, and it is freshly demonstrated that the time is not yet ripe for a lasting upturn in the market to take place. The recent experience of the local houses does not seem to have been duplicated in other Western markets, and the conclusion is that the little spurt of buying was local rather than general in its scope. It is also true that its development was due in no small measure to the enterprising efforts of sales departments, which during the period in question were engaged in an unusually active campaign for business. It is a generally recognized fact that the machinery trade will follow rather than lead the onward march toward the full re-establishment of normal industrial conditions. General confidence in future betterment will, of course, give rise to some purchases in anticipation of future needs, but until the volume of business has increased sufficient to set in motion the factory equipment now idle, it is needless to expect widespread demand for new equipment. Some replacements, it is true, will be required in all lines of machinery, and these can be depended upon to furnish a steady, if not a large, run of orders.

The nonappearance of railroad inquiries is the source of a good deal of disappointment to the machinery trade. It was expected that several lists representing extended requirements of the leading roads would be submitted for bids early in the year, but thus far none of significant importance has appeared. The greatest expansion in the way of new enterprises seems to be in the extreme Northwest, especially in the Pacific Coast States, where quite a number of important hydro-electric power plants are being promoted, some of which are already under construction. The development of cheap power thus provided naturally gives impetus to manufacturing industries, which in turn call for machinery equipment.

The general contract for construction of the new pipe foundry plant of James B. Clow & Sons, at Coshocton, Ohio, has been awarded to Luyster & Lowes, Dayton, Ohio. The original plans for the buildings comprising this plant, contemplated solid walls of reinforced concrete, some of which were 40 ft. high. It was found, however, that the patterns alone for this work would entail a cost of not less than \$21,000, and it has therefore been decided to substitute steel for the subwalls of reinforced concrete, which will extend up to the window line. The buildings to be erected at this time aggregate 3,000,000 cu. ft. of space, which is not quite half

of the construction embraced in the ultimate plans for the completed plant. At the beginning, the equipment of these shops will consist mainly of machinery supplied from the firm's existing plant at Newcomerstown, Ohio, which will be dismantled. A large amount of new machinery will also be required, but just what will be needed cannot be determined until the work is further advanced.

A new building for an automobile garage and machine shop at Detroit, Mich., is now under construction by Frazee Brothers, and includes a main garage room, 25 x 104 ft.; office, 24 x 30 ft.; machine shop, 24 x 49 ft., with cement floor and fireproof roof. While specifications for the machinery equipment have not been completed, the general plans contemplate the installation of tools to turn out all kinds of automobile work. The firm of Frazee Brothers will be incorporated likely under the name of the Frazee Brothers Auto Company, with headquarters at Pelican Rapids, Minn., where the owners are interested in other lines of business.

Pilkington & Daly, Roseburg, Ore., have under construction a new building, 40 x 110 ft., designed to accommodate a machine and blacksmith shop with an automobile garage department. The plant will be equipped with suitable machinery, which will include a lathe, shaper, emery grinder, drill press, screw cutting machine, punch shears, polishing machine, vulcanizing machine, &c. Present plans contemplate the addition of a foundry department, the construction of which will be undertaken in the spring.

The Gisholt Machine Company, Madison, Wis., has just opened a Chicago office, with display rooms on the second floor of the new Sharpe Building, at Washington boulevard and Desplaines street, where a line of Gisholt machine tools has been installed for demonstration purposes. These tools will be equipped with motors so that a practical demonstration of their power, speed, efficiency and convenience can be shown in a most convincing manner. The Chicago office is in charge of Charles Spalding.

Plans for the extension and improvement of the Macon, Mo., electric light plant and water works system now under consideration, include the installation of a 250-hp. Corliss engine, two motors, 30 and 60 hp. capacity; two centrifugal pumps, one 125-hp. boiler, wire for the extension of transmission lines, and a stand pipe or tower of 150-gal. capacity. E. S. Bennett is superintendent.

The Public Lighting Commission of Detroit, Mich., will open bids January 18 for additional equipment to be installed in the municipal lighting plant, including one 2000-kw. steam turbine, one 2500-kw. alternating current generator and one 60-kw. exciter. Frank R. Mistersky is city electrician and general superintendent.

The Fairfield Gas & Electric Company, Fairfield, Iowa, is arranging to overhaul and modernize its plant in the spring by the installation of a new boiler, engine, dynamos and other equipment, the cost of which is estimated at about \$35,000.

The Northern Electrical Mfg. Company, Madison, Wis., has moved its branch office from St. Paul to Minneapolis, Minn., where it has larger and better facilities. T. E. Drohan, who has been representing the company in St. Paul, will continue in charge of the Minneapolis office.

**Cincinnati Machinery Market.**

CINCINNATI, OHIO, January 12, 1909.

In the machinery markets it is much as though the inertia of mid-holiday times had been prolonged, and the sense of quiet and restfulness which comes at that time to owner and employee alike, and is expected, is still in the air, and the two forces are now alert and ready for business and industry, which is singularly absent.

Manufacturers of tools, woodworking and special machinery and allied lines have not made many entries in the new year's order books. The railroads, with the exception of some few lists already noted in the columns of *The Iron Age*, are not issuing any new ones, and save a few stock orders, principally from the West, trade is very quiet.

Local tool builders are expecting a good part of the list of the Carolina, Clinchfield & Ohio Railroad, Johnson City, Tenn., particulars of which have been received here.

From Denver and the far West come some rather encouraging news of future business. One local manufacturer of shapers has just had a duplicate stock order for a 20-in. and 25-in. back gear shaper, replacing two machines ordered a month ago and sold in the interim. Letters of a similarly encouraging nature were received by this manufacturer from San Francisco and Los Angeles agents.

Local foundries are increasing melts slowly, although there is scarcely a perceptible improvement thus far over December's best record.

Dealers in second-hand machinery see little change in the situation. Pending sales have as a rule been slow of consummation, and the interest in these stocks is slight. Scrap dealers are still holding on to stocks with tenacious grips and making little or no concession to stir up the consumers. An explanation of their independent attitude in



the face of the lethargic conditions is offered in the statement that they are expecting to make large shipments to the new Gary plant soon.

The information is given out that the power house of the Lake Shore Electric Railroad, located on Columbus avenue, Sandusky, Ohio, is to be overhauled and turned into a car building and repair shop. The old boilers are to be removed and if present plans mature as expected it is stated that several pieces of woodworking machinery will be installed. The company has for some time repaired its damaged cars, and found that with an inconsiderable expense could arrange to build its equipment throughout. The offices of the company, it is reported, will be moved to Sandusky about April 1 and will be located in the Moore Block.

The loss on the plant of the Union Steam Boilers Works at State and Centre streets, Columbus, Ohio, by fire recently is estimated at about \$12,000, with about 40 per cent. insurance. A considerable part of the loss was on machinery, a large part of which was new. J. J. Borger, owner, has not stated his plans.

Henry Loeb of the Ohio Metal Company, Columbus, Ohio, is quoted as saying that there has been a steady improvement in trade conditions the past few weeks in metals. The company is using more copper, lead, spelter and other metals than for some time, and it is the opinion that these facts, coupled with the good inquiry prevalent in manufacturing lines, indicate a comparatively early resumption of business in general.

### Cleveland Machinery Market.

CLEVELAND, OHIO, January 12, 1909.

The largest inquiry received by the local machine tool dealers in many months came during the past week from the Jeffrey Mfg. Company, of Columbus, Ohio. The inquiry is for 40 to 50 machines, including about all the standard machine tools in large, medium and small sizes, and some special machinery. It is expected that this order will be placed within the next few weeks. Aside from this inquiry the market has been quiet during the past week. Manufacturing plants are still engaged in taking their annual inventories, and until these are completed not much improvement is expected, but dealers are looking for more activity after this week. Although the improvement in general business conditions was checked during the holiday season the outlook for a greater volume of business early in the year is regarded as very satisfactory, and a better volume of orders received by manufacturers will quickly stimulate the machine tool market. This effect is already being noticed in a few cases where manufacturers have held off in the placing of orders for new equipment until they actually needed it and then, when orders have come in that they were unable to fill in the time specified with the equipment on hand, they have come into the market for machinery for as quick delivery as possible.

The demand for electrical power equipment is light, but an improvement is looked for early in the year. Drop forging plants report a good volume of work on hand, both for forgings for automobile parts and for other purposes, and some new inquiries have come in during the past week for steam hammers for drop forging plants.

In the foundry trade the demand for steel castings has improved slightly. No further improvement is noticed in the demand for iron castings, although foundries, as a rule, have considerable more work on hand than they had two months ago.

June 7 to 19 has been selected as the date for the Cleveland Industrial Exposition. Exhibits will be limited to those of manufacturers of Cuyahoga County, in which the city of Cleveland is located. The exposition will be held in Central Armory, which has 24,000 sq. ft. of exhibition space, in an adjoining temporary building, with fully as much space, and in the Chamber of Commerce auditorium. Funds for the support of the exhibition will be raised by an admission charge and from the rental of space to manufacturers.

The Park Drop Forge Company, Cleveland, which started in business with a new plant a year ago, has just installed two additional steam hammers and is putting in two more, making 13 in all. The company reports considerable improvement in orders, having enough work on hand at present to keep the plant running at full capacity for some time.

The Cleveland office of the Allis-Chalmers Company has just taken an order from the Kelley Island Lime & Transportation Company for two No. 6 stone crushers for its plant at Akron, Ohio, and for one 200-hp. and one 100-hp. motor. When the new crushers are installed the plant will have two No. 9 crushers, one No. 8 and three No. 6, making it one of the largest stone crushing plants in the country under one roof.

At the annual meeting of the stockholders of the Burt Mfg. Company, Akron, Ohio, held last week, the report of the officers showed that in spite of the business depression the company did 80 per cent. as much business during 1908 as during the previous year, which was the largest in its his-

tory. The outlook for this year was reported to be excellent. At this meeting J. Asa Palmer, who has been secretary and treasurer for several years, was elected secretary and assistant manager. The other officers elected for the ensuing year are: W. F. Warden, president and general manager; H. F. Maranville, vice-president; M. E. Knowles, second vice-president; H. J. Blackburn, treasurer, and C. F. Beery, general counsel.

The National Lamp Company announces that it will at once begin the erection of a new Tungsten lamp factory at Warren, Ohio. The plant will be about 75 x 150 ft. and four stories high.

Construction work on the main building of the Ohio Seamless Tube Company's plant at Shelby, Ohio, has been completed by the McClintic-Marshall Construction Company of Pittsburgh. The structure is 160 x 180 ft., of heavy mill construction.

The Apex Mfg. Company, Cleveland, has been incorporated with a capitalization of \$25,000 by A. C. Caleb, W. G. Stewart, J. L. Croft, J. Kasik and E. E. Mullen to manufacture plumbers' brass goods. Its present offices are at 1308 Addison road.

The new \$500,000 corporation that has been formed to take over the plants of the Niles Iron & Steel Company and the Niles Corrugating Company, Niles, Ohio, will be known as the Thomas Steel Company, instead of the Thomas Steel & Iron Company, as announced last week. The two plants will go under one management under the new name on February 1.

### New England Machinery Market.

BOSTON, MASS., January 12, 1909.

Business does not improve, and the trade is beginning to believe that the influences that have been holding back buying will not be quickly overcome, though it is still thought that with each succeeding week there will be some increase in orders. Last week was a fair one. Probably the average of business is now 25 per cent. greater than it was six months ago. The experience of two Boston houses tells something of the change in conditions already experienced. The fiscal years of both end February 1. One deals in supplies, the other in machine tools. The former, up to October 1 last, since its fiscal year began, had done 70 per cent. of the volume of business as compared with the corresponding period of 1907. January 1 the percentage had increased to 80, and it is estimated that the year will close on about that basis, because January, 1908, was a very good month. The machine tool house up to October 1 had done 40 per cent. of the volume of business of the same months of 1907, and this percentage had increased to 55 on January 1, and will probably reach 60 by the end of this month. These figures would probably apply quite closely to the Boston trade as a whole.

The delay in the starting up of the market is attributed largely to the pending tariff legislation. It is not, however, that a reduction in tariff would change the cost or selling price of machine tools. The difference in cost of materials would be so small as to be hardly worth considering in making up the lists. Neither would the trade be affected even if the tariff on machinery were materially reduced; or, as far as that is concerned, if it were entirely eliminated, a very unlikely outcome of the revision. American users of machine tools would hardly be tempted to buy foreign machinery, even if it were cheaper than domestic, for the same reason that American machines have the preference abroad even at higher prices. Perhaps if conditions were the same as they were a decade ago, and European machinery of the same comparative merit was brought here and offered at low prices as compared with the domestic product, some injury would be wrought to the American machine tool industry. But to-day the demand is not for cheaper machinery, but for the best. Users are not content with inferior tools, even though they may cost less. When machine tools were practically out of the market, during the rush times, no attempt was made to go abroad to supply the demand, and neither would many machines have been sold here had there been no tariff. The American manufacturer will not be content with anything but American built machinery. The tariff influence to-day is on the product of users of machine tools, though it is not likely that many of them will be seriously affected by any change that may be made in the schedules.

The woodworking machinery business is improving rapidly. The New England manufacturers report that the demand continues to increase. Business has been much better since summer. Reports from the great lumbering territories, including the Pacific Coast, hold out promise of a strong market for this class of equipment. Prices are returning to the levels which were established in 1906-07. The woodworking machinery industry is not a united one; its manufacturers have not come together in active co-operation as to prices, consequently during the depression prices have followed the market, in sharp contrast to the machine tool

trade. It was not alone the lack of co-operation which produced this result. Some of the builders believed that better results could be obtained by reduced prices. There is some difference of opinion as to whether the resulting demand was larger. However that may be, business has sufficiently improved to bring prices back nearly or quite to the point where they were before the reductions went into effect.

The Julian d'Este Company, 24 Canal street, Boston, has brought out a new steam separator.

The Snell Mfg. Company, Fiskdale, Mass., manufacturer of augurs and auger bits, will rebuild the plant recently destroyed by fire. The insurance is not yet adjusted, and it is not yet known when the work will begin. In the meantime, temporary arrangements for manufacturing will be made.

The plan for making navigable the Connecticut River from Hartford, the present head, to Springfield and Holyoke, has fallen through, at least for the present. The report of a representative of the War Department has been accepted, and is unfavorable to the plan under existing conditions. It was necessary that the Connecticut River Power Company, which controls the water power at Windsor Locks, Conn., should relinquish its rights, and this it declined to do. Important industries depend upon this source of power, and it is considered entirely natural that the company's decision should be unfavorable. The only possible solution of this navigation problem is that offered by a private company to establish a water power at Enfield Rapids, in Connecticut, the works to include a lock which would permit the passage of small vessels up and down the river. Nothing has been done toward the fulfillment of this project beyond the introduction of a bill in Congress giving the necessary permission.

The Connecticut Computing Machine Company, New Haven, Conn., is contemplating making additions to its equipment to increase the output to 100 computing machines monthly.

Projected street railroad work in Connecticut, as named in petitions to the Legislature for necessary permission, include the plans of the New Canaan Street Railway Company to build a line in the towns of Norwalk and New Canaan, and to the New York State line; and those of the Groton & Stonington Street Railway for a street railroad in the town of Groton.

A dispatch from Bridgeport, Conn., announces the sale of a large water front property to the Lake Torpedo Boat Company, which proposes to establish a large shipyard for the building of torpedo boats. It is stated that instead of having the boats built in foreign yards the work will be concentrated at Bridgeport.

## Government Purchases.

WASHINGTON, D. C., January 12, 1909.

The Isthmian Canal Commission will receive bids until January 31, Circular No. 488, for electric motors and other supplies.

The following bids were opened January 5 for machinery for the navy yards:

Class 2.—One quick change engine lathe—Bidder 1, American Tool Works Company, Cincinnati, Ohio, \$841; 32, Fairbanks Company, New York, \$1229 and \$1163; 33, Frevert Machinery Company, New York, \$693; 39, Garvin Machine Company, New York, \$975; 51, Hendey Machine Company, Torrington, Conn., \$929; 68, Manning, Maxwell & Moore, New York, \$886, \$715 and \$884; 90, Niles-Bement-Pond Company, New York, \$836; 115, Springfield Machine Tool Company, Springfield, Ohio, \$851.

Class 3.—One back geared engine lathe—Bidder 1, American Tool Works Company, Cincinnati, Ohio, \$1232; 32, Fairbanks Company, New York, \$229 and \$1163; 33, Frevert Machinery Company, New York, \$978; 39, Garvin Machine Company, New York, \$1370; 51, Hendey Machine Company, Torrington, Conn., \$1553; 68, Manning, Maxwell & Moore, New York, \$1448, \$1000 and \$1215; 90, Niles-Bement-Pond Company, New York, \$1250 and \$1195.

Class 4.—One heavy geared head engine lathe—Bidder 68, Manning, Maxwell & Moore, New York, \$7900; 90, Niles-Bement-Pond Company, New York, \$6993, \$7273, \$7265 and \$7545; 155, I. H. Johnson, Jr., Company, Philadelphia, Pa., \$7020 and \$7152.

Class 11.—One rotary splitting shear—Bidder 53, Hartman Company, Philadelphia, Pa., \$870; 108, Joseph T. Ryerson & Son, Chicago, Ill., \$635; 152, De Zouche, Hanson & Co., Philadelphia, Pa., \$1145.

Class 12.—One double cam brake—Bidder 33, Fairbanks Company, New York, \$450; 97, George A. Ohl & Co., Newark, N. J., \$450.

The following bids were opened December 31 for powder hoists for the War Department:

Type A, for each 12-in. hoist, exclusive of chain, motors, &c.—Bidder 1, Long Arm System Company, Cleveland, Ohio, \$1188; 2, Richard Mfg. Company, Bloomburg, Pa., \$775; 3, Bergen Point Iron Works, New York, \$764; 4, Conveying Machinery Company, New York, \$906; 5, New Jersey Foundry & Machine Company, New York, \$945; 6, Dietrich Bros., Baltimore, Md., \$728; 7, Greenlee, Wyatt & Co., New York, \$1145; 8, Detroit Hoist & Machine Company, Detroit, Mich., \$2750; 9, Modern Steel Structural Company, Waukesha, Wis., \$1188; 10, Atlanta Machine Works, Atlanta, Ga., \$900; 11, Cleveland Crane & Engineering Company, Wickliffe, Ohio, \$893; 12, Hoisting Machinery Company, New York, \$885.

Type B, for each 12-in. hoist, exclusive of chain, motors, &c.—Bidder 1, Long Arm System Company, Cleveland, Ohio, \$1064; 2, Richard Mfg. Company, Bloomburg, Pa., \$775; 3, Bergen Point Iron Works, New York, \$824; 4, Conveying Machinery Company, New York, \$866; 5, New Jersey Foundry & Machine Company, New York, \$895; 6, Dietrich Bros., Baltimore, Md.,

\$718; 7, Greenlee, Wyatt & Co., New York, \$1000; 8, Detroit Hoist & Machine Company, Detroit, Mich., \$2250; 9, Modern Steel Structural Company, Waukesha, Wis., \$1225; 10, Atlanta Machine Works, Atlanta, Ga., \$930; 11, Cleveland Crane & Engineering Company, Wickliffe, Ohio, \$830; 12, Hoisting Machinery Company, New York, \$905.

Type C, for each 12-in. hoist, with 12 ft. of tube, track and fittings complete.—Bidder 1, Long Arm System Company, Cleveland, Ohio, \$1144; 2, Richard Mfg. Company, Bloomburg, Pa., \$800; 3, Bergen Point Iron Works, New York, \$709; 4, Conveying Machinery Company, New York, \$1047; 5, New Jersey Foundry & Machine Company, New York, \$1300; 6, Dietrich Bros., Baltimore, Md., \$893; 7, Greenlee, Wyatt & Co., New York, \$1520; 8, Detroit Hoist & Machine Company, Detroit, Mich., \$2600; 9, Modern Steel Structural Company, Waukesha, Wis., \$1172; 10, Atlanta Machine Works, Atlanta, Ga., \$712; 11, Cleveland Crane & Engineering Company, Wickliffe, Ohio, \$950; 12, Hoisting Machinery Company, New York, \$1309.

Type A, for each 10-in. hoist, exclusive of chain, &c.—Bidder 1, Long Arm System Company, Cleveland, Ohio, \$1224; 2, Richard Mfg. Company, Bloomburg, Pa., \$765; 3, Bergen Point Iron Works, New York, \$787; 4, Conveying Machinery Company, New York, \$1099.80; 5, New Jersey Foundry & Machine Company, New York, \$950; 6, Dietrich Bros., Baltimore, Md., \$748; 7, Greenlee, Wyatt & Co., New York, \$1125; 8, Detroit Hoist & Machine Company, Detroit, Mich., \$2750; 9, Modern Steel Structural Company, Waukesha, Wis., \$1078; 10, Atlanta Machine Works, Atlanta, Ga., \$975; 11, Cleveland Crane & Engineering Company, Wickliffe, Ohio, \$893; 12, Hoisting Machinery Company, New York, \$870.

Type C, for each 10-in. hoist, with 12 ft. of tube, track and fittings complete.—Bidder 1, Long Arm System Company, Cleveland, Ohio, \$1144; 2, Richard Mfg. Company, Bloomburg, Pa., \$800; 3, Bergen Point Iron Works, New York, \$709; 4, Conveying Machinery Company, New York, \$1023.50; 5, New Jersey Foundry & Machine Company, New York, \$1300; 6, Dietrich Bros., Baltimore, Md., \$893; 7, Greenlee, Wyatt & Co., New York, \$1520; 8, Detroit Hoist & Machine Company, Detroit, Mich., \$2600; 9, Modern Steel Structural Company, Waukesha, Wis., \$1172; 10, Atlanta Machine Works, Atlanta, Ga., \$712; 11, Cleveland Crane & Engineering Company, Wickliffe, Ohio, \$950; 12, Hoisting Machinery Company, New York, \$1309.

Bids for machinery, electric system, &c., were received January 4, for Fort Monroe, Va., as follows:

Item 1, two 264-hp. boilers; 2, one 100-hp. boiler; 3, two 250-hp. engines; 4, one 120-hp. engine; 5, two 150 kw. generators; 6, one 75-kw. generator.

Heine Safety Boiler Company, St. Louis, Mo., item 1, \$7675; 2, \$2702. York Engineering Company, York, Pa., item 3, \$9564; 4, \$2993. Watson-Flagg Engineering Company, New York, item 5, \$5204; 6, \$1231. D'Oiler Engineering Company, Philadelphia, Pa., \$11,759 for item 4. McCay Engineering Company, Baltimore, Md., \$47,777 for item 5.

Under bids opened December 22 for machinery for the navy yards, August Mietz, New York, has been awarded class 71, one 60-hp. kerosene engine, \$3700.

The following awards have been made for machinery for the navy yards, bids for which were opened December 15:

Brown & Sharpe Mfg. Company, Providence, R. I., class 1, one universal milling machine, \$2419.25.

Harron, Ricard & McCone, San Francisco, Cal., class 2, one No. 4 vertical high power milling machine, \$2205.

Henshaw, Bulkley & Co., San Francisco, Cal., class 3, one automatic turret machine, \$1445.

## British Pig Iron and Steel in the First Half of 1908.

Statistics are just published by the British Iron Trade Association on the production of pig iron and steel in Great Britain in the six months ending June 30, 1908. The output of pig iron was 4,633,353 gross tons, as compared with 5,194,712 tons in the first half of 1907 and 4,905,424 tons in the first half of 1906. The falling off from the first half of 1907 was chiefly in hematite iron, the figures for the six months' periods being 1,683,293 tons and 2,103,248 tons for 1908 and 1907, respectively.

The output of Bessemer steel ingots in the first half of 1908 was 738,170 tons, as compared with 1,068,972 tons in the first half of 1907. This was the first half year in seven years in which the production fell below 800,000 tons. The output of Bessemer rails was 319,606 tons, as compared with 452,774 tons in the first half of 1907 and 487,184 tons in the first half of 1906.

The average number of blast furnaces operated in the half year ending June 30, 1908, was 321, against 378 in the first half of 1907. The total number of blast furnaces in the United Kingdom on June 30 was 510. The average number of Bessemer converters in operation in the six months was 48, of which 27 were acid and 20 were basic. In the first half of 1907 the corresponding figures were 36 acid and 21 basic.

The British Board of Trade statement for November shows a decrease of \$36,188,000 in imports and \$33,573,500 in exports from November, 1907. The falling off in imports is principally in raw material, while in exports it is confined to manufactured goods, of which \$20,000,000 is in cotton and wool textiles.



# HARDWARE

IT would contribute to clear thinking on the proposed changes in the postal service if, instead of speaking of a "parcel post," it were more accurately designated a **MERCHANDISE POST**. The term parcel post is, indeed, preferable in the judgment of the advocates of the project because it sounds inoffensive and even attractive, as it suggests the convenience of being able to mail small packages. The trouble with the term, parcel post, is that it disguises the real character of the proposed service, and is apt to convey the impression that the project is concerned only with occasional and incidental carriage in the mails of things other than reading matter, when, in fact, it aims at the regular and systematic carriage of goods or merchandise in the line of business. This, by the way, is the reason it is so earnestly favored by the catalogue and other mail order houses.

This is indeed the object of the plan advocated by the Postmaster-General, who favors, as officially stated, "the reduction of rates upon **MERCHANDISE**," and "establishing a **MERCHANDISE DELIVERY SYSTEM**." It is, therefore, a merchandise post, though called a parcel post, aiming openly at the carriage of merchandise by the Post Office and breaking away entirely from the original purpose of the postal service. Parcel post suggests the mailing of packages of small size and moderate weight, as at present permitted, and would hardly fit the service of carrying in the mails such articles as Clothes Baskets, Ash Cans, Window Screens and Snow Shovels—for all these articles come within the limitations prescribed in the bill which represents the recommendations of the Post Office Department. To call this a parcel post is a little beside the mark. It is a **MERCHANDISE POST** with a vengeance.

There is another reason for frankly calling it a merchandise post in the fact that the project looks for the carriage of merchandise generally, systematically, and in large quantities through the mails. At present the mailing of parcels is principally used in a limited way as a personal convenience, but the changes advocated contemplate its very general and very extensive use in a business way for the delivery of goods purchased. If the merchandise post should be put into operation on the lines proposed it would indeed be necessary to its success that it be largely used, no matter how expensive this might be to the Government or how it might disturb existing methods of distribution and thus interfere with the prosperity of the commercial classes.

If the merchandise post should be put into operation there would be an interesting, though somewhat embarrassing, dilemma for the Department. An extensive and very expensive provision must be made for the carrying of the mails—large and multitudinous mail bags, innumerable mail wagons, postal cars that will be fitted up for the carriage of express matter, larger post offices everywhere, adequate outfit for the carriers in every city, town and village where there is a delivery system, wagons or vans for the rural carriers on every one of the 40,000 routes. The dilemma by which the Department would be confronted is in the fact that to justify and employ all these mail facilities it would be necessary to carry large quantities of goods constantly; while, on

the other hand, the more merchandise is carried at the proposed rates (especially when it is remembered that the express companies will take all the profitable business, leaving to the Government only the unprofitable business), the greater will be the loss to the Government. The alternative is thus on the one hand large, and necessarily large facilities which are little used; and, on the other hand, the general employment of these facilities in unprofitable business, involving a constantly increasing deficit in the Department's finances.

But while the question as to the advisability of the Government's taking up the transportation of goods through the mails is under consideration, it would be well if the misleading term parcel post would be given up, and the project be designated in accordance with its real nature as a **MERCHANDISE POST**.

## Condition of Trade.

The past week or two have been in many establishments largely devoted to matters more or less aside from actual efforts to affect sales. The closing days of the year and the opening of its successor are usually most wisely used in ascertaining the results of the business for the past twelve months, and in a careful consideration of the policy to be pursued and the plans to be put into operation. It is safe to assume that the figures which represent the course of things in 1908 call for some modification of methods during the present year. While one of the obvious lessons to be learned is frequently the need of economy or curtailment in certain directions, there should be also the suggestion of opportunity for development, and perhaps enlarged expenditure in other directions. Some forms of activity will need to be modified and other efforts along new and different lines should be suggested. Those who are content to follow the same paths and employ the same methods without deviation or enlargement are probably lacking in recognition of the defects of their management and blind to the opportunities which open before them. We are accordingly passing through the period for the discovery and correction of mistakes, the making of new plans and the carrying out of them in a practical way. Many conferences with traveling salesmen have been held by the larger houses and arrangements made for an early and vigorous looking for business. Preparations for the season's trade are an important part of the work of the opening weeks of January. With the manufacturers the present condition of things presents difficult problems in view of the uncertainties of the market in regard to the volume of business, the cost of material and the course of prices. While it is comparatively easy for merchants, whether wholesale or retail, to buy conservatively and safely, having the manufacturers to draw upon for their supplies, it is quite different with those who make the goods. It is necessary for them to plan farther ahead and take chances which the distributors can avoid. While there is a general expectation that business will continue gradually to improve the merchants are buying in moderate quantities, hoping that liberal replenishing orders will soon be justified. A few large houses have indeed been purchasing with a good deal of liberality, which contrasts with the careful and conservative course pursued by



others. The merchants are experiencing the advantage there is in being able to get goods promptly, but this advantage to them has obviously its side of disadvantage to the manufacturers, who are obliged to accumulate stocks manufactured at high costs, with a possibility on the one hand that the market may weaken and on the other hand that there may come an urgent demand which will quickly deplete their warehouses, for merchants' stocks are generally low. In this state of things prices remain without material change. Some revisions are being made constantly and an urgent call is made upon all charged with the purchasing of goods to keep in close touch with the market and its changes. This is especially the case as it is, more than for some time, a buyer's market. Prices which appear to be regularly maintained with a good degree of uniformity will often yield if an attractive order is presented.

### Chicago.

With 1908 now well in the background and the plans and problems of 1909 fairly to the fore and commanding full attention, the energies of all trade interests are fully centered upon the business campaign of the new year. Salesmen, after a brief interval of relaxation afforded by the holidays, have resumed active duty in their respective fields, and their efforts can be depended upon to start a livelier flow in the stream of orders, which for the past two or three weeks has felt the need of such an impelling force. As was remarked by a speaker who recently addressed a body of traveling men, "All good salesmen are optimists, for if they are not optimists they cannot be good salesmen"; and this, if not unqualifiedly so, is essentially true. It will not be disputed that there is a tonic effect in a hopeful view of things, which is not only infectious, but inspires stronger and more courageous efforts. A cold wave which was prevalent through the Middle West for the past few days has been severe enough to put a stop to outside work, which up to this time was subject to but little interruption from weather causes. In local building operations its effects will not be felt so much by the Hardware trade as would have been the case if it had developed earlier, for the reason that a large number of buildings begun late in the season are now under cover and ready for finishing work, which can be done regardless of weather conditions. As is usually the case, influences that tend to retard trade in one direction often preserve the equilibrium by stimulating it in another. Thus, the present cold snap is helping dealers to move stocks of Skates that have been carried over for two or three seasons owing to the lack of skating weather. Reorders that have been coming in to the jobbers this week indicate that the demand has been general and has overreached the estimates of forward purchases. Weather Stripping and Oil and Gas Stoves are also among the lines helped by the dropping temperature, and the demand for such goods is now urgent.

### NOTES ON PRICES.

**Wire Nails.**—Demand shows improvement over that earlier in the month, as mills are receiving more orders since salesmen have been on the road, and merchants are getting their stocks in shape for spring business. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00
Less than carloads to jobbers.....	2.00
Less than carloads to retail merchants.....	2.10

**New York.**—Local market conditions remain without material change, a moderate but steady demand being in evidence. Nails are held on the basis of \$2.30 per keg, in small lots at store, but some sellers are occasionally inclined to shade this figure.

**Chicago.**—In view of the little effort made to push business prior to the middle of last week, orders have been coming in at a fairly good rate. The last few days have reflected the stimulating effects of the resumption of

work by salesmen in a better volume of business. There would be little to complain of in other lines if the same degree of activity existed as in Wire Nails, for which the demand is not far from the normal average. Prices are reported to be satisfactorily maintained. Quotations are as follows: \$2.13 in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

**Cut Nails.**—Not much improvement is reported in demand, as it is too early for activity in outside building operations. The regular price for Steel Cut Nails is \$1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and \$1.75 for carloads and larger lots, but these figures are shaded in some cases. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**New York.**—A moderate amount of business characterizes the local market, the demand being somewhat less than a few weeks ago. Steel Cut Nails are held on the basis of \$2.15 per keg for small lots, at store, but this price is not strictly adhered to by all sellers.

**Chicago.**—The severe weather that has prevailed throughout the West for several days has interfered with the continuance of outside construction work and naturally curtailed the consumption of Nails. Only immediate needs are considered in orders placed by jobbers and retailers, and they are consequently small. It is expected that marked improvement will follow the opening of building work, which promises well for the coming season. With \$1.93, Chicago, as the minimum for Steel Cut Nails in car lots and over, prices are fairly well maintained. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, \$2.08; Steel Cut Nails, \$1.98.

**Barb Wire.**—Some activity is noted in the demand from Southern territory, and this is expected to increase as the season progresses. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

**Chicago.**—The Southern trade has opened up with a fairly good demand which by the first of February is expected to develop satisfactory proportions. Orders from other sections are light, representing only present needs, which at this season are not at any time extensive. Steadiness of prices continues to characterize all transactions. Quotations are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Plain Wire.**—Specifications on contract orders from manufacturers and jobbers are being received by the mills. New business is comparatively light. Prices are well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.....	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....	\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35	
Galvanized.....	2.10	2.15	2.20	2.25	2.35	2.45	2.55	2.65	

**Chicago.**—While for the present not much new business is being entered, liberal specifications against contracts placed by manufacturers and jobbers late in the fall continue to supply the mills with a fair tonnage. This will doubtless be increased soon by new buying, which is expected to begin about the first of the coming month; and with the prospects of a busy season ahead for manufacturers of Fencing, a good volume of business is looked for. Prices are said to be evenly maintained. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

**Bright Chains.**—The Eastern manufacturers of Bright Chains have made changes in the list price of certain sizes of Breast, Wagon and Log Chains. The prices which have been altered are indicated by heavy face type in the following lists:

Breast Chains. With T Bar. English size.		Per pair.
American size. Inch.	Inch.	
27, 8, 3.....	27, 10, 2.....	\$0.58
26, 10, 3.....	26, 12, 2.....	.64
27, 10, 3.....	27, 12, 2.....	.66
30, 10, 3.....	30, 12, 2.....	.73
26, 10, 2.....	26, 12, 1.....	.74
27, 10, 2.....	27, 12, 1.....	.77
30, 10, 2.....	30, 12, 1.....	.86
27, 9, 3.....		.62
27, 9, $\frac{5}{16}$ .....		.90
28, 9, $\frac{5}{16}$ .....		.95
30, 9, $\frac{5}{16}$ .....		1.05
24, tapered $\frac{5}{16}$ to $\frac{1}{4}$ .....		.75
27, tapered $\frac{5}{16}$ to $\frac{1}{4}$ .....		.85
30, tapered $\frac{5}{16}$ to $\frac{1}{4}$ .....		.97
34, tapered $\frac{5}{16}$ to $\frac{1}{4}$ .....		1.13
27, tapered $\frac{3}{8}$ to $\frac{5}{16}$ .....		1.25
30, tapered $\frac{3}{8}$ to $\frac{5}{16}$ .....		1.40
34, tapered $\frac{3}{8}$ to $\frac{5}{16}$ .....		1.60
24, double slack twist.....		1.10
26, double slack twist.....		1.15
27, double slack twist.....		1.20
30, double slack twist.....		1.50
27, Star stiff.....		1.40

Snap one end, 8 cents net per pair extra.

Wrought T Bars, 4 cents net per pair extra.

Breast Chains, single twist, with Malleable Slides, 25 cents per dozen pair net extra.

NOTE.—26, 8, 3, American size, or 26, 10, 2, English size, has been discontinued.

**Breast Chain, Pennsylvania Pattern.**

Double or Single Twist.—Stiff.

Bright or Black, with T Bar.

	Per pair.
26-in. $\frac{1}{4}$ -in. iron, double twist.....	\$1.75
26-in. $\frac{5}{16}$ -in. iron, double twist.....	2.00
26-in. $\frac{1}{4}$ -in. iron, single twist.....	2.25
26-in. $\frac{5}{16}$ -in. iron, single twist.....	2.50
26-in. $\frac{3}{8}$ -in. iron, single twist.....	2.75

**Coil Log, Ox or Binding Chain.**

Long and Short Link, Hook and Ring and Grab Hook.

Inch.	Per pound.
$\frac{1}{4}$ .....	\$0.23
$\frac{5}{16}$ .....	.19
$\frac{3}{8}$ .....	.15½
$\frac{1}{2}$ .....	.15½
$\frac{3}{4}$ .....	.14½
$\frac{7}{8}$ .....	.14

If polished,  $\frac{1}{4}$  cent net per pound extra.

**Wagon Chain.—Per Pound.**

	$\frac{1}{4}$ in.	$\frac{5}{16}$ in.	$\frac{3}{8}$ in.
Stay .....	\$0.18	\$0.16	\$0.15½
Tongue .....	.18	.16	.15½
Lock .....	.19	.17	.16½
Stretcher .....	.22	.20	.18½
Fifth .....	.22	.20	.18½

**German Coil and Halter Chain.**—Competition, aggravated, possibly, by a desire on the part of some houses to stimulate sales, has led to lower prices on German Coil and Halter Chain. Some low figures have been named, which are not met by all the importers. In a general way, however, the line may be said to be about 5 per cent. lower and fairly represented by a quotation of 70 and 5 per cent. discount.

**Twist Drills.**—A distinct improvement is apparent in the tone of the Twist Drill market, in which slight irregularities were observed before the first of the year. Some low quotations have been withdrawn and a fair degree of uniformity is shown by the prices of most manufacturers, although, as usual, a somewhat higher level is maintained on preferred brands than on those which are not so well established on the market. Taper and Straight Shank Drills, standard brands, may fairly be quoted at a discount of from 65 to 65 and 10 per cent., while on Bit Stock Drills a discount of from 70 to 70 and 10 per cent. may be mentioned.

**Leather Belting and Lacing.**—The market for Leather Belting and Belt Lacing continues to stiffen. Particular firmness is observed in standard grades of Raw Hide Cut Lace and Sides.

**Auger Bits.**—An advance of 5 per cent. was made last week by some manufacturers of Auger Bits, in reflection of which the market to the general trade may be repre-

sented by a discount of 80 per cent. As this is the second advance in this line within a few weeks, it is fair to assume that jobbers have stocks purchased somewhat below the manufacturers present extreme prices.

**Spirits Turpentine.**—During the week prices have advanced about 2 cents per gallon at this point, resulting in a limited business. Manipulation at Southern markets is given as the cause of the higher prices. The New York market is represented by the following quotations: Oil Barrels, 44¼ to 44¾ cents; Machine Made Barrels, 44¾ to 45¼ cents per gallon.

**Window Glass.**—The strike inaugurated by the National Window Glass Workers on December 19 continues in force, except in factories that have adopted the flat scale of wages. A total of 516 pots is claimed by the workers' organization, as having adopted the flat scale of wages, representing, it is stated, 35 per cent. of the capacity of hand blown factories operating at the time the strike commenced. A meeting of manufacturers is scheduled for this week to give all an opportunity to co-operate in the formation of the Imperial Glass Company. Should this not be effected some manufacturers will close down for the winter, and others may follow. Buying is now from hand to mouth, and at a higher cost of Glass it is anticipated that the demand would be even less. It is reported that the American Window Glass Company took orders for enough Glass before advancing prices to keep its factories busy for some time. The following quotations will act as a guide to the market, but probably, excluding the American Company, they are not rigidly adhered to: 90 and 20 per cent. for single and 90 and 25 per cent. for double strength Glass, from manufacturers' list. The Western Window Glass Jobbers' Association's discounts from the jobbers' list of October 1, 1903, which is about 25 per cent. higher than the manufacturers' list, are as follows: Single, 90 and 25 per cent.; Double, 90 and 30 per cent. The Eastern Window Glass Jobbers' Association have adopted the same discounts.

**Rope.**—Manufacturers generally report a quiet market, somewhat contrary to anticipation. It had been hoped that by this time there would be a considerable increase in demand, but this has not been realized. The market shows some weakness, especially in Manila cordage, with the range of prices a trifle lower. Quotations on small quantities of Rope, 7-16 in. in diameter and larger, are as follows: Pure Manila, 8½ to 8¾ cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. These prices are sometimes shaded ¼ cent on larger orders. Jute Rope, ¼-in. and up, No. 1, is 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

**Linseed Oil.**—Two advances during the week under review have brought the price to the basis of 54 cents for State and Western Raw Oil. This is the result of advances in the Flax Seed market. Indications are that the anticipated price of 60 cents may be realized. The advances have affected buying, as usual in such cases, and the market is very quiet. Crushers are referred to as unwilling to take orders for deliveries up to April 1, except at an advance on the 5-bbl. price. Quotations in 5-bbl. lots are as follows: State and Western Raw, 54 cents per gallon; City Raw, 55 cents per gallon. Boiled Oil is 1 cent advance on Raw.

THE sixteenth convention of the American Hardware Manufacturers' Association will be held concurrent with the nineteenth annual convention of the Southern Hardware Jobbers' Association, at Pittsburgh, Pa., on June 9, 10 and 11, with headquarters for both conventions at the Schenley Hotel. All applications for hotel reservation should be addressed to James Riley, Schenley Hotel, and should state the names of the persons who will occupy each room for which reservation is requested.

THE twenty-third annual banquet of the Hardware Merchants' and Manufacturers' Association of Philadelphia will be held at the Bellevue-Stratford in that city on Wednesday evening, January 20.



## BUSINESS MEN OPPOSED TO PARCEL POST LEGISLATION.

**A**T the monthly meeting of the Wilmington, Del., Board of Trade, held on the 5th inst., the subject of parcel post legislation was specially considered. The topic was introduced by T. James Fernley, Philadelphia, secretary of the National Hardware Association, who opposed the proposition on the ground that it would mean the destruction of the country stores and communities, as it would give the big mail order houses a better rate and a better chance to reach the rural districts. F. E. Muzzy of the Standard Arms Company of Wilmington and vice-president of the Board of Trade, also spoke adversely on the question. A general discussion followed, and a resolution was then adopted in which the board declared its earnest and emphatic protest against the establishment of a parcel post on the rural routes and against parcel post in any form. A copy of the resolution was ordered sent to the boards of trade in the peninsular district, to the National Board of Delegates and to Representatives in Congress.

Practically all the merchants of Newark, N. Y., have signed a petition against parcel post, which has been forwarded to Representative Payne of that district. The petition is to the effect that the carriage of merchandise in the mails on the rural routes is not only open to many serious objections on the ground of expense and public policy, but the fact is also emphasized that while such a merchandise post would be greatly to the advantage of the catalogue houses and department stores of the large cities it would be detrimental to the interests and welfare of the smaller communities.

## Association of Edison Purchasing Agents.

**T**HE Association of Edison Purchasing Agents which was organized with a view to promoting a better acquaintance among this class of officials, whose activities, intelligently directed, may be made even more valuable to the companies they serve, recently held its fifth regular meeting at Buffalo, N. Y. The advantages possible in respect of prices, both from an interchange of views and a consolidation of orders in the widely distributed electrical lines, are obvious. The immense quantities of supplies necessitated by the conduct of the already great but constantly expanding business of supplying electric light, heat and power throughout the country makes this line of trade particularly desirable, much of which is measured in carloads. The officers chosen for the ensuing year, most of whom were re-elected, are as follows: H. F. Frasse, Edison Electric Illuminating Company, Brooklyn, N. Y., president; C. A. Harding, Commonwealth Edison Company, Chicago, Ill., vice-president; H. C. Lucas, Philadelphia Electric Company, Philadelphia, second vice-president; James B. Eaton, Rochester Railway & Light Company, Rochester, N. Y., treasurer; Andrew Banks, Jr., Consolidated Gas, Electric Light & Power Company, Baltimore, stock controller; J. W. Brennan, Edison Illuminating Company, Detroit, Mich., secretary.

The next regular meeting of the association will be held at the same time and place as the convention of the National Electric Light Association as provided for in the by-laws. Some idea of the success, so far, of this movement is the fact that its members already include about 30 per cent. of the leading electric light companies, extending from New England to the Pacific Coast.

NEARLY 200 hundred persons prominently identified with New York, Chicago, St. Louis, Minneapolis, Baltimore, Seattle, Dallas, San Francisco and Omaha houses of Butler Bros. recently attended the annual convention at Chicago. The gathering was the most successful and enjoyable one thus far held. It concluded with a dinner given by President E. B. Butler in the new banquet room of the Chicago Athletic Association on the evening of January 7.

## WINDOW DISPLAY OF SMALL TOOLS.

**T**HE accompanying illustration represents a window display of small Tools made by the Tracy, Robinson & Williams Company, Hartford, Conn. The window is 8 x 9 ft. in size, and no background was used, the space on the side and back of the display board being left open for light. On the board, which was 44 x 72 in. in size, were Tools made by the Billings & Spencer Company of that city. The floor of the window is level, but a small raised platform was used to display other small goods



Window Display of Small Tools.

to better advantage. Small articles were stood about the base of the platform and others were laid on the floor of the window. The company making the display remarks that increased sales always result from a well arranged display of this character, and that the impression produced is a lasting one. It has also been found that displays consisting of a large quantity of any one article attract a great deal more attention than a window filled with a varied assortment. The company also believes that attractive window displays are the very best and cheapest form of advertising.

THE officers of the Gender & Paeschke Mfg. Company, Milwaukee, Wis., tendered their sales representatives a dinner on the 5th inst. Those present numbered 25, including Chas. A. Paeschke, president, and F. J. Frey, secretary and treasurer. Thos. A. Musgrove, as toastmaster, elicited a number of interesting remarks touching on the progress of the company, as well as complimentary to its officers. Many of those present have been with the company since its incorporation and have watched its growth from an humble beginning to a big industry employing over 900 people, with a plant of over 10 acres of floor space.

IRA G. HOWE, senior member of the firm of Howe & Shipley, Lafayette, Ind., and a pioneer merchant of Tippecanoe County, died New Year's Day from an apoplectic stroke which came the night before. He had been in failing health for more than a year. He was 82 years old, had been a citizen of Lafayette since 1843, and for more than 60 years had been one of the most prominent and respected citizens of the community.

THE CHATTANOOGA ROOFING & FOUNDRY COMPANY, Chattanooga, Tenn., gave its usual New Year's dinner to the department managers and traveling salesmen. An excellent menu was served, and interesting speeches were made by nearly all those present. J. E. Annis, president, gave a business talk in which he thanked the employees for their loyalty, and congratulated them that in spite of the panic 1908 was one of the best years in the history of the company, which was organized in 1881.

THE Hardware stock and business of James W. Chitwood, Franklin, Neb., has been purchased by Lynch & Burton.

## The Retail Hardware Associations.

**D**URING 1908 a healthy and substantial growth in membership characterized the Retail Hardware Associations of the country. While but one State association, that of Florida, was formed during the year, but few States are now without an organization, and the merchants of most of these are to a greater or less extent affiliating with organizations already in the field in nearby States. This is notably the case with Pennsylvania, which has added many retailers in New Jersey, Delaware, Maryland and District of Columbia to its roll during the past few months.

As for several years the mutual insurance companies conducted under the auspices of men prominently identified with the associations have been a potent influence in securing accessions to the membership, in view of the marked economy offered by this form of insurance with annual rebates on the premium paid of from 25 to 50 per cent. The encroachments of catalogue and mail order houses, the threat of parcel post legislation, with its blighting effects on the welfare of the smaller communities, abuses of jobbers and manufacturers in the way of selling to consumers, have all contributed to the growth of the membership. The unquestioned benefits secured by attendance at the annual gatherings with their keen and suggestive discussions of practical topics and the spirit of fraternity and mutual helpfulness thus engendered, have also had an important influence.

Quite a respectable percentage of the retail Hardware merchants of the country are now enlisted under the banners of the various associations and new members are constantly being added. Nevertheless, a considerable proportion of merchants are still outside the fold, and there is lots of opportunity for missionary work on the part of the able and energetic officers of the various bodies. These officials are also charged with the responsibility of making the organizations increasingly useful, so that members will find it to their advantage to continue their identification with them. In this connection it is gratifying to note that a co-operative spirit on the part of many of the rank and file in supplementing the work and efforts of the officers is more marked than heretofore.

We give below some particulars in regard to the various associations, for which we are indebted to the secretaries. These in the main have to do with the increase in membership during the year, the present standing and the firms eligible for membership which are still unaffiliated. Some information is also given as to the features and progress of association work. In addition, references are made to the approaching conventions in January, February and March, and the arrangements which are in progress to make the gatherings interesting and instructive:

### Alabama Retail Hardware Association.

The Alabama Association, which was organized a year and a half ago, has about tripled its membership during the past 12 months. Approximately 200 merchants eligible for membership are still outside the organization. The officers are looking forward to a great convention in Birmingham in the early summer, and it is expected at that time to record a material increase in membership.

### California State Retail Hardware Association.

About 50 new members have been added to the roll during the past year, making the membership January 1 165. Eligible for membership and still outside the association are about 400 merchants throughout the State. In Southern California a separate Hardware association of a sectional character is in existence with a membership of 100. Some of these merchants belong to the State Association, but the majority do not. During 1909 an energetic effort will be made to increase the membership of the association, and it is expected that before many months have passed the roll will include more

than 250 names. The next annual meeting, as noted in another column, will be held in Oakland, March 10, 11 and 12.

### Carolinas Retail Hardware Association.

Reports the addition of 25 active and 10 associate members to the roll during the year, making the total membership, January 1, 155, 45 of this number being associate members. In North Carolina there are about 275 eligible Hardware merchants and in South Carolina about 200. At a meeting of the Executive Committee held in the Selwyn Hotel, Charlotte, on the 28th ult., several committees were appointed by the president, with a view to conducting an active campaign on behalf of the association, and the programme for the convention at Asheville to be held in the early summer was outlined. The association expects to give special prominence to the Hardware exhibit feature at this year's meeting, and already quite a number of inquiries have been received as to space.

### Connecticut Hardware Association.

During the year four names have been added to the membership, but with firms going out of business and other changes, the aggregate is about the same as at the beginning of 1908, 85 members. It is estimated that there are about 20 firms in the State who are eligible for membership, and have not yet affiliated with the association.

### Idaho Retail Hardware and Implement Dealers' Association.

The fact that only six members have been added to the roll during the past year is attributed mainly to a new Hardware organization in southern Idaho, which has lately got underway. The distances in this State are so great and the railroad transportation so difficult that it is inconvenient for merchants in all parts of the State to assemble at any one point. The northern portion has no direct railroad communication with the southern, and accordingly some of the Hardwaremen in that territory have affiliated with the Inland Empire Association, whose headquarters are at Spokane. The present total membership is a little more than 50.

### Illinois Retail Hardware Association.

This body has had a very steady growth during the year. Having a very large membership it is not expected to add very many to the number from now on. The present membership is approximately 1100, something like 100 having been added the past year. About 400 merchants in the State have not as yet availed themselves of membership, but they are coming in gradually. One of the pleasant features of the work of this association is the fact that quite a large number of the members are actively and intelligently co-operating with the officers in their efforts to place the association in a position to render the best service to the trade. The annual convention will be held February 17-19 at Springfield, which being the capital of the State and situated in the central part, will, it is expected, insure the attendance of a large number of merchants. The former Supreme Court rooms of the Illinois State Capitol Building will be used for the business sessions. This building is situated half a block from the State Armory, where the exposition will be held. The hall of the armory is 134 ft. wide by 213 ft. long, and the facilities for both convention and exposition are regarded as the best that the Illinois Association has ever enjoyed. The local arrangements for the gathering are in the hands of the Retail Hardware Merchants' Association of Springfield, with its Executive Committee consisting of Charles W. Zumbrook, Fred. P. Schlitt and Charles H. Robinson in immediate charge, Mr. Schlitt being secretary, and ready to furnish any information desired in regard especially to the exposition.

### Inland Empire Implement and Hardware Association.

The accessions to the membership roll during 1908 aggregated 37, making the present total 220 firms. It is estimated that the number of merchants in the territory covered by the association, which includes portions of



Washington and Idaho, who are eligible for membership and are still unidentified with the association approximately 150. The association is working very energetically on all questions affecting the welfare of the trade, and is giving the proposed parcel post legislation particular attention. The State lien, mortgage, foreclosure and exemption laws are now up for consideration before the Legislation Committee, with a view to making recommendations as to amendments.

#### **Indiana Retail Hardware Association.**

Notwithstanding business conditions and other considerations that might tend to keep a nonaffiliated merchant from giving thought to associations and their work during the year the Indiana organization has been very successful in booking new members. Up to January 1 an even 125 new members have been secured, and the present strength is very close to the 750 mark, which represents a large proportion of the total Hardware merchants of the State.

#### **Iowa Retail Hardware Association.**

The programme for the eleventh annual convention of the Iowa Association at Des Moines, February 9 to 12, has just been issued. The meeting will be held at Yeoman's Hall with Hardware exhibition at the Shriners' Temple. Quite an elaborate programme has been prepared and the meeting promises to be an unusually interesting one. Among the formal addresses will be those of George H. Maxwell, Chicago, on "The Country Town is the Hope of the Nation," and Charles W. Burrows, Cleveland, on "Parcel Post." A paper on "Business Methods" will be read by W. H. Stepanek, Cedar Rapids. Robert Garland, Pittsburgh, president of the American Hardware Manufacturers' Association, and A. T. Stebbins, Rochester, Minn., president of the National Retail Hardware Association, will also be in attendance and make addresses. The Question Box will be a feature of each session. On Thursday evening the members of the association and other visitors will be the guests of the Des Moines Hardware Club at the Elks' Auditorium. The official headquarters of the association will be at the Savery Hotel.

#### **Minnesota Retail Hardware Association.**

The total membership is now 930, and it is confidently expected that by the time of the annual meeting in February the number will have increased to 950. New members taken in during the year number 126. About 350 retail houses are still unaffiliated with the association, but gains are being made each year, with a constant increase in the percentage of membership. Last year was the first in which Minnesota held a Hardware exhibition in connection with its convention. It proved a great success, and it is proposed to duplicate it on a larger basis in Minneapolis this year. The hall in which the exhibits will be accommodated has about 30 per cent. more floor space than the one occupied last year, and of this space fully 80 per cent. has been disposed of, although the meeting is still nearly six weeks away. The Minnesota merchants have carried on an aggressive campaign against parcel post, and as a result numerous protests from all parts of the State have been sent to the Senators and Representatives.

#### **Mississippi Retail Hardware Association.**

This association, which was organized in the summer of 1907, has added 35 members during the past year. Its membership is now in excess of 100, including 40 honorary members. About 150 merchants in the State are still outside the fold. The annual meeting will be held at Jackson May 11 and 12, and in connection with it it has been decided to hold a Hardware exhibition.

#### **Missouri Retail Hardware Association.**

The officers of the Missouri Association, with 350 members, are making energetic efforts to increase its enrollment by arousing the Hardwaremen of the State not affiliated with the organization to the importance of co-operation for the common welfare. A circular letter lately sent out by the president, O. W. Johnston of

Marshall, calls attention briefly but incisively to some of the evils and dangers by which the trade is threatened and the necessity of presenting a united front to those who would encroach on the interests of the small retailers of the country. He appeals to his brother Hardware merchants not yet enrolled to stand shoulder to shoulder with those who are actively at work and send in their applications for membership so that by the time of the annual meeting in St. Louis, February 3, 4 and 5, the numerical strength of the association will have increased to 600, which will be about 50 per cent. of the total number of firms in the State eligible for membership. To make the convention more attractive an exhibition of Hardware and kindred products will be held. More than 100 spaces have been provided in a large and well equipped hall at prices ranging from \$10 to \$45. In this connection it is announced that after the meeting a book will be issued and mailed to every Hardware merchant in the State, which will contain a description of the various exhibits, as well as a list of members and particulars in regard to the convention proceedings.

#### **Nebraska Retail Hardware Association.**

The increase in membership during the past year has been 78, making the present total approximately 550. There are about 1000 houses in the State eligible for membership, so that more than 400 are still outside the association. The Hardware mutual fire insurance company, which is conducted under the auspices of men prominent in the affairs of the association, has been a magnet in obtaining new members. This company has been organized only two years, but notwithstanding its youthful age it has been able to return 25 per cent. of the amount of premium paid, and during 1909 it is intended to raise the return premium or rebate to 33 1-3 per cent.

#### **New England Hardware Dealers' Association.**

About 200 houses are now enrolled in the association, the increase during the past year amounting to 35. It is estimated that there are more than 1000 merchants in New England eligible for membership in the association. Rhode Island and Connecticut have, however, State associations of their own, and a little over a year ago about 50 of the Connecticut members of the New England Association withdrew. A special effort is being made to interest merchants in Maine, New Hampshire, Vermont and Massachusetts in the association, and during the coming year it is hoped to add many new names. The January meeting of the Board of Directors was held at the rooms of the Boston Merchants' Association, President S. H. Thompson, Lowell, in the chair, nine directors being present. Ten applications for membership were received and accepted. Reports of the various committees appointed to look after arrangements for the annual meeting at the Cooley Hotel, Springfield, Mass., with Hardware exhibition at Graves Hall, March 11 and 12, were presented, all of which point to a most interesting and profitable gathering. F. Alexander Chandler, Boston, member of the Executive Committee of the National Retail Hardware Association, was elected delegate to attend the meeting of the Pennsylvania Hardware Association at Philadelphia. Charles L. Underhill, secretary, Somerville, is preparing a bulletin to be issued by February 1, which will include the full programme of the meeting and other trade matter of general interest.

#### **New York State Retail Hardware Association.**

On January 1 the membership of the Empire State Hardware body was 361, 45 accessions having been made since the last convention in February. It is estimated that there are about 1800 retail Hardware firms in the State outside of Greater New York. The membership includes many of the influential concerns in the various cities throughout the State, although there has been until recently a disposition to hold aloof on the part of many large and representative houses. This disposition is, however, being gradually overcome, and it is hoped that by the time of the annual convention in Rochester the number of firms connected with the association will have been materially increased.

**North Dakota Retail Hardware Association.**

Sixty new names were added to the roll during 1908 and the present membership in good standing amounts to about 375 firms, leaving it is estimated only about 100 eligible retail Hardware houses in the State that are not identified with the organization. The convention this year at Bismarck will be held during the period when the State Legislature is in session, and this fact it is believed will have a tendency to attract a larger number of merchants than usual from all parts of the State. The local Entertainment Committee has secured the use of the armory for the accommodation of Hardware exhibits, the convention being held at the Commercial Club rooms.

**Ohio Hardware Association.**

As a result of energetic canvassing during the past year 90 new names have been added to the membership roll, honorary and active. The present total membership, honorary and active, is 1104. Somewhere between 300 and 400 Hardware merchants in the State are not affiliated with the association. It is pleasant to report that the members are taking a deeper interest in the work than ever before. A number of accessions to the roll are expected to be made at the annual meeting, which will be held in February. The demand for spaces at the Hardware exhibition is unprecedented, and every available foot of Memorial Hall will soon be contracted for. The Hardware merchants of the State are showing a good deal of public spirit and are rendering every assistance possible to the good roads movement, the deep waterway project and the commission on country life.

**Oklahoma Retail Hardware and Implement Dealers' Association.**

The accessions to the membership during 1908 have been 45 in number. The membership roll now totals 525, and there are still about 500 eligible Hardware merchants in the State who have not yet seen their way clear to make application for membership.

**Pennsylvania Retail Hardware Association.**

Since August 1, when a systematic campaign for new members was begun, the accessions number nearly 300, and many more are expected before the annual convention, to be held in Philadelphia, February 10, 11 and 12. Inasmuch as the adjoining States of New Jersey, Delaware and Maryland and the District of Columbia have no Hardware organizations, invitations have been sent to the Hardware firms in these States, and quite a number have joined the Pennsylvania Association. The convention will be held at the Bellevue-Stratford, while the First Regiment Armory will be occupied by the exhibition of Hardware products. Among other entertainments the Philadelphia Hardware Merchants' and Manufacturers' Association will tender the visitors a smoker at the Bellevue-Stratford, while theater parties will be arranged for the ladies accompanying members. Governor Stuart has been invited to address the convention, and Mayor Reyburn will deliver the welcoming address. Others who will address the gathering will be Congressman J. Hampton Moore, on "Deeper Waterways"; J. H. Maxwell on "The Future of the Nation," and R. E. Sheldon on "Salesmanship."

**South Dakota Retail Hardware Association.**

The paid-up members of the South Dakota body now total nearly 200, which represents not quite 50 per cent. of the total number of Hardware merchants in the State who are available for membership. The coming convention and Hardware exhibition at Huron on March 2, 3 and 4, are relied upon to bring many new members into the association, as a large attendance is expected.

**West Virginia Retail Hardware Association.**

The paid up membership now embraces 70 firms, with about 40 honorary members. The number of houses in the State eligible for membership and not yet affiliated is about 200. At the next annual meeting, in Charleston, February 16-18, a liberal increase in membership is expected from the southern part of the State.

**Wisconsin Retail Hardware Association.**

The present membership is nearly 700, and there are approximately 300 retail concerns in the State eligible, but still outside the association. The mutual insurance feature has done much to increase the membership of the association. The programme for the annual convention in Milwaukee, February 3 to 5, is just being sent out to the trade. Many questions will come up for discussion at the meeting through the Question Box, for which time has been allotted at all the sessions. There will also be a discussion of the troubles of the city retailer, of the country retailer and of the traveling salesmen, introduced by Louis Wells, Milwaukee; F. E. Settengren, Baraboo, and Joseph Koehler of the Simmons Hardware Company, St. Louis, respectively. Interesting talks on advertising by R. D. Baldwin of the Simonds Mfg. Company, Fitchburg, Mass., and on "Troubles of a Railway Company," by John Callahan, are also on the programme. Quite a large delegation of the officers of the National Retail Hardware Association will be in attendance.

**RETAIL HARDWARE CONVENTIONS.**

The following conventions will be held during January, February and March, the list being arranged in the order of dates:

**OREGON RETAIL HARDWARE AND IMPLEMENT DEALERS' ASSOCIATION**, January 19 and 20, Portland. Secretary, W. P. Balderston, Portland.

**TEXAS RETAIL DEALERS' HARDWARE AND IMPLEMENT ASSOCIATION**, January 19-21, Dallas. Headquarters at Southland Hotel. Hardware Exhibition. Secretary, J. W. McManus, Dallas.

**INLAND EMPIRE IMPLEMENT AND HARDWARE ASSOCIATION**, January 20-22, Spokane, Wash. Convention and Hardware Exhibition at the Armory. Secretary, E. W. Evenson, Hutton Building, Spokane.

**PACIFIC FEDERATION OF HARDWARE AND IMPLEMENT ASSOCIATIONS** (embracing California, Oregon, Washington, Idaho and Montana), January 22, 23, Spokane. Convention and Exhibition at the Armory. Secretary, T. M. Shearman, Monadnock Building, San Francisco, Cal.

**NORTH DAKOTA RETAIL HARDWARE ASSOCIATION**, January 26-28, Bismarck. Convention at Commercial Club rooms. Official headquarters at Grand Pacific Hotel. Hardware exhibition at the Armory. Information as to exhibits and hotel accommodations may be obtained from N. S. Young, secretary, Commercial Club, Bismarck. Secretary, C. N. Barnes, Grand Forks.

**MISSOURI RETAIL HARDWARE ASSOCIATION**, February 3-5, St. Louis. Hardware Exhibition. Secretary, F. D. Kansteiner, 1008 Market street, St. Louis.

**WISCONSIN RETAIL HARDWARE ASSOCIATION**, February 3-5, Milwaukee. Convention and Hardware Exhibition at Public Service Building. George W. Kornely, secretary Exhibit Committee, 806 Third street, Milwaukee. Secretary, C. A. Peck, Berlin.

**CONNECTICUT RETAIL HARDWARE ASSOCIATION**, February 8 and 9, Waterbury. Headquarters at Hotel Elton. Secretary, J. DeF. Phelps, Windsor Locks.

**OKLAHOMA RETAIL HARDWARE AND IMPLEMENT DEALERS' ASSOCIATION**, February 9-11, Oklahoma City. Convention and Hardware Exhibition at Exposition Hall. Secretary, D. C. Patterson, Bassett Building, Oklahoma City.

**ONTARIO RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION**, February 9-11, Hamilton. Secretary, Weston Wrigley, 10 Front street, East, Toronto.

**IOWA RETAIL HARDWARE ASSOCIATION**, February 9-12, Des Moines. Convention at Yeoman's Hall. Hardware Exhibition at the Shriners' Temple. Headquarters at Savery Hotel. Secretary, A. R. Sale, Mason City.

**PENNSYLVANIA RETAIL HARDWARE ASSOCIATION**, February 10-12, Philadelphia. Headquarters and convention at Bellevue-Stratford. Hardware Exposition at First Regiment Armory. Secretary, W. P. Lewis, Huntingdon.



WEST VIRGINIA RETAIL HARDWARE ASSOCIATION, February 16-18, Charleston. Secretary, Leslie Hawker Shinnston.

NEBRASKA RETAIL HARDWARE ASSOCIATION, February 16-19, Omaha. Convention and Hardware Exhibition at the Auditorium. Secretary, J. Frank Barr, Lincoln.

NEW YORK STATE RETAIL HARDWARE ASSOCIATION, February 16-19, Rochester. Headquarters and Convention at Hotel Seneca. Hardware Exhibition at Convention Hall. Chairman Exposition Committee, Louis J. Ernst, Rochester. Secretary, J. B. Foley, Syracuse.

ILLINOIS RETAIL HARDWARE ASSOCIATION, February 17-19, Springfield. Convention at the State capitol. Hardware Exposition at the State armory; space in charge of F. B. Schlitt, Springfield. Secretary, L. D. Nish, Elgin.

KENTUCKY RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION, February 23-25, Louisville. Hardware Exposition. Headquarters at Seelbach Hotel. Secretary, J. M. Stone, Sturgis.

MINNESOTA RETAIL HARDWARE ASSOCIATION, February 23-26, Minneapolis. Convention and Hardware Exposition at the Armory. Secretary, M. S. Mathews, Guaranty Building, Minneapolis.

OHIO HARDWARE ASSOCIATION, February 23-25, Columbus. Convention and Exposition at Memorial Hall; W. M. Crumrine, Chairman Exhibit Committee, Salem. Secretary, Frank A. Bare, Mansfield.

INDIANA RETAIL HARDWARE ASSOCIATION, March 2-5, Indianapolis. Headquarters, Hotel English. Hardware Exposition. Secretary, M. L. Corey, Argos.

SOUTH DAKOTA RETAIL HARDWARE ASSOCIATION, March 2-5, Huron. Convention and Hardware Exposition at the Auditorium. Secretary, H. E. Johnson, Redfield.

CALIFORNIA STATE RETAIL HARDWARE ASSOCIATION, March 10-12, Oakland. Secretary, L. R. Smith, Oakland.

NEW ENGLAND RETAIL HARDWARE DEALERS' ASSOCIATION, March 11-12, Springfield, Mass. Hardware Exhibition. Secretary, Charles L. Underhill, Somerville.

THE disposition on the part of manufacturers to aid merchants by giving information in regard to the meritorious qualities of their products, so as to furnish them with talking points, is illustrated in what the White Mountain Freezer Company, Nashua, N. H., is doing in regard to its Freezers. For example, in informing the trade as to the special features of the Freezer can they call attention to the quality of the tin, the fitting of the covers and the ease with which the covers can be removed without disturbing the can in the freezing mixture. The value of such definite, practical suggestions to clerks and salesmen is obvious.

THE BROWN-WALES COMPANY, Boston, Mass., on January 2, held a very successful salesmen's dinner at Young's Hotel. After the dinner and some warm words of welcome from the treasurer of the company, Mr. Wales, who presided, the salesmen were addressed by Nathaniel C. Fowler, Jr., of Boston, on the qualities of successful and unsuccessful salesmen. At the conclusion of his remarks, which were very interesting and suggestive, there was a spirited discussion for an hour or more between Mr. Fowler and the salesmen. The salesmen voted it the "best meeting yet," and all present felt much benefited by the occasion.

L. C. GROVER has resigned from the presidency of Colt's Patent Fire Arms Mfg. Company, Hartford, Conn., and the Colt Arms Company of New York. He has been in poor health for some time, but has been made chairman of the two boards. J. F. A. Clark and C. A. Morse have resigned as directors of both companies. In consequence a number of new officers have been elected, Col. W. C. Skinner being elected president and C. L. F. Robinson and F. C. Nichols, vice-presidents, while A. L. Ulrich becomes secretary of the Colt Arms Company, to succeed Mr. Morse.

## RETAILERS BUYING FROM MANUFACTURERS.

### A Reply to Mr. Simmons.

To the Editor:—I was much interested in the able article from Mr. Simmons in the issue of *The Iron Age* of January 7, and believe Mr. Simmons has done more than any other one person to improve conditions in every way for the retail Hardware trade. Not only has he been successful himself but he has honestly and constantly worked for the upbuilding of his friends and customers, and the results can but give him great pleasure and with satisfaction can be compared the retail Hardware stores and their methods of 40 years ago with those of to-day.

E. C. Simmons and I. W. Morton made a business team the equal of which this country has never known. Many jobbers, however, in their enthusiasm over the retailer, forget just where the line should be drawn between the manufacturer and the jobber, and sometimes criticize the retailer for buying direct from the manufacturer. Mr. Simmons states "There are three classes of Hardware interests: manufacturers, wholesalers (or jobbers) and retailers. The proper function for the manufacturer is to sell to the jobber only; the jobber to the retailer."

Mr. Simmons also remarks that "The salesman from a Cutlery manufacturer comes along and persuades the retail dealer to give him an order. . . . It appears to me that there is no reason in the world why the retailer should not remain loyal to the jobbers and I strongly urge them to do so for mutual benefit."

### Jobbers as Manufacturers.

The business of the Simmons Hardware Company according to their letter heads is "Manufacturers and Distributors." It is currently reported that the Simmons Hardware Company owns and controls the greater part of one of the largest Pocket Knife factories in this country, besides entire factories for the manufacture of other goods they sell. Many of the Hardware jobbers of to-day are more or less directly interested in manufacturing, and yet they all insist that "the proper function for the manufacturer is to sell to the jobber only." This is hardly consistent, for their salesmen are continually impressing on the retailer the great saving to them of the middleman's profit, because of the jobber manufacturing his own goods.

Jobbers may excuse themselves to those who are manufacturers only by saying they manufacture for their jobbing business and resell to the retailers again, but the jobbers' salesmen do not so explain to the retailer.

I knew a large exporter in New York (now retired) who also had a large domestic trade, and when export prices were lower than for the home market he bought all such goods to "go across the water," and to ease his conscience had a 1/4-in. water pipe put across the basement under the floor, and goods bought at export prices to be sold to domestic trade were carried across the water.

### Eliminating the Jobber.

It is of recent date that Hardware jobbers as a class have taken up manufacturing in connection with wholesaling, and as this eliminates the manufacturer of the lines the jobber makes from the jobber's trade (Harness is a prominent example) it forces the manufacturer direct to the retailer, and not a few manufacturers have found the new method of eliminating the jobber more satisfactory and profitable. This condition is growing, and I believe will grow more rapidly in the future where lines of goods can be so distributed.

I hardly think it is consistent for the jobbers to criticize the manufacturers for a condition that they, the jobbers, helped to create.

A MANUFACTURER.

THE RICHARDS MFG. COMPANY, Aurora, Ill., gave a banquet to its selling force on the evening of December 30, at the Bishop Hotel. About 30 were present, including the officers of the concern, department superintendents and members of the office force. This most enjoyable affair was a feature of the salesmen's convention and reunion which the company is now holding every year.

## The Trade Situation in the Canadian Northwest.

*We give below letters from well-known and representative houses in the Canadian Northwest, which present an excellent view of trade conditions in that great and rapidly developing section of the Dominion. It will be observed that while business during 1908 was not of satisfactory volume, the prospects for the present year are decidedly encouraging.*

### From the J. H. Ashdown Hardware Company, Winnipeg :

FOR some years the Canadian Northwest has been expanding by leaps and bounds with the result that the wholesale houses supplying the trade there have steadily shown gratifying increases in their business. It is hardly necessary to point out that in the provinces of Manitoba, Saskatchewan and Alberta there have been and are still large areas of the finest kind of agricultural land undeveloped, and which invite settlement on the part of the farmer. As a result, there has been, as is well known, a steady influx of settlers yearly of the best class and with means, who have been opening up and developing this vast country, and there remains such large areas of fertile soil to be settled and such opportunities for railroad expansion that it may be said these provinces are but in their infancy.

#### Crop Conditions of 1907 Were Unsatisfactory.

The conditions mentioned obtained up to the year 1907 but the spring of that year was very late, the summer was cold and the crops were therefore from a month to six weeks behind normal conditions. As a result, the frost caught the farmer over a large part of this territory, and instead of the big crop which was anticipated there was a partial failure and the grade of the wheat especially was poor.

Added to this there came the financial stringency which prevented capital from going to the help of those who were thus disastrously affected, and there were really hard times in this country during the whole winter of 1907 and the spring of 1908. This necessarily affected both sales and collections. Merchants would not buy when their customers could not pay. Wholesalers did not care to ship if the retailer had to be carried over for his last year's indebtedness, and business more or less marked time in consequence.

#### Things More Normal During the Past Year.

With the summer of 1908 things assumed a better aspect. The spring was early and good. The summer was propitious up to the middle of July, but from that time there commenced in many districts a dry spell which affected the crop in some localities. Our friends in the States to the immediate South of us suffered under the same drawback. In addition, in a few places there was early frost, so that instead of the crop of 1908 being a bumper one (as at one time looked probable) it was in reality but a fair average crop, and not nearly so large per acre as those of 1905 and 1906.

#### Prospects for the New Year Are Excellent.

Still, business improved and, while it has not yet reached its former volume, there is the utmost confidence in the future of the country, and the prospects for the year 1909 are first class. This is caused not only by the absolute belief in the capacity of the Northwest as a grain growing district, but also because capital is being invested based on that belief. The railroads are being extended into hitherto unsettled areas and settlers are continuing to come in, particularly from the United States, and the future of this country undoubtedly is assured. Particularly is this the case because of the fact that the United States is gradually reducing its exportation of wheat, and the time can be easily foreseen when its vast population will consume the entire crop raised within its boundaries.

### The Canadian Northwest Is Bound to Be One of the Principal Grain Producing Centres

of the world. It does not need an optimist to look forward to the time when this entire country will be gridironed by railroads and closely covered by an industrious and teeming population. It will be but a few years, comparatively speaking, until this happens, and meanwhile it is an absolute certainty that the trade of the country will continue to increase with the growth of the Great Northwest.

In this increase American manufacturers undoubtedly will share the benefit. While Canadians have steadily increased their manufacturing output, at the same time the demands for United States goods are large, and the various houses in your country realize this and devote the most careful attention to the trade of the Northwest. There is no reason why the trade relations between the countries should not grow still more intimate, and why both should not reciprocally be benefited by their growing and continuous prosperity.

### From McLennan, McFeely & Co., Vancouver :

During the year 1908 the financial depression prevalent all over the world affected the general trade of this province to probably a lesser degree than any other portion of North America. Nineteen hundred and seven was a most prosperous year, yet as month after month passed of 1908 we were most agreeably surprised to note that the trade had only shrunk from about 5 to 10 per cent. In our own case this shrinkage hardly amounted to 5 per cent., and the whole of it can be accounted for by the depression we experienced in the lumber industry. During the months of July, August, September and October the logging industry was practically at a standstill, while many of the saw mills, particularly those in the interior, were closed.

#### Removal of Duty on Lumber Will Have Exhilarating Effect.

For the last two months there has been a distinct revival in both of these and much trading in standing timber. This is undoubtedly accounted for from the certainty that the duty on lumber shipped into the United States will be removed. The removal of this duty will have a most exhilarating effect on the whole of this province, and will result in the rapid development of our tremendous lumbering resources.

#### Fine Prospects for 1909.

The prospects for the coming year are, we are pleased to state, of the very best. The holiday trade has been unequalled in our history, and there is a striking revival of interest along all lines. Mining which has been partially at a standstill, more particularly copper mining, is being pushed again with vigor. The coming year is the big year in the fishing industry. This, as you are no doubt aware, comes at intervals of every four years. The building of the Grand Trunk Pacific Railway through the northerly portion of the province is to be aggressively pushed to completion, and the advent of the Chicago, Milwaukee & St. Paul, the Canadian Northern and the Northern Pacific, as well as considerable extensions to existing lines, will mark the year 1909 as the greatest railroad building year in our history.

#### Consumption of American Goods.

American manufacturers of Builders' Hardware, Shelf Goods and small mechanical tools are getting fully 75 per cent. of the trade in these lines. In the heavier lines, however, such as bar iron, steel, sheet metals, Chain and Nails the trade goes entirely to English and Canadian houses.

C. C. McGregor & Son, Carsonville, Mich., a newly organized firm, has purchased from W. R. Harvey the Hardware business conducted by him for the past 20 years. The stock consists of Shelf, Heavy and Builders' Hardware, Stoves, Ranges, Pumps, Buggies, Varnishes, Oils, &c.



## Joint Postal Commission's Postal Note Project.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., January 12, 1909.

IN addition to combatting the movement for a parcel post on rural routes and especially that insidious proposition of an "experiment" to cost "only a few hundred thousand dollars," the retail merchants of the country are now to be compelled to meet another paternalistic project for which the catalogue houses have energetically labored for nearly a decade, namely, a postal currency. This proposition will be brought forward in the House as soon as the annual Post Office Appropriation bill is disposed of, and in the form of an elaborately worked out provision of the bill providing for the reorganization of the postal service framed by the Joint Postal Commission, which includes the ranking members of the Senate and House Post Office Committees. With the influence of the Joint Commission behind the measure the advocates of a postal currency confidently count on being able to carry through their long desired object, which they had despaired of accomplishing as an independent proposition.

### The Postal Note as Framed by the Joint Postal Commission.

The mail order houses have constantly kept in view two postal projects of almost equal advantage to them, first, a cheap postal currency to enable them to gather in the pennies, dimes and dollars of the residents of rural sections; and, second, a parcel post system to be used as a cheap agency for the distribution of their merchandise. The two schemes dovetail together with great nicety, and either is incomplete without the other. The postal note project as formulated by the Joint Postal Commission is set out in its report to Congress as follows:

**POSTAL NOTES.**—There is another lack in the present organization which, although not a structural weakness or a defect of equal importance with those previously mentioned, is one which your commission think should be filled—namely, the want of a convenient, easy and cheap method of transmitting small sums by mail. While the present system of money orders is entirely adequate for the transmission of considerable sums, it is too expensive and cumbersome for the transmission of small sums. Your commission have, therefore, provided for the introduction of postal notes or money orders without advices for the transmission of sums not exceeding \$5. Such notes will be issued for fixed amounts on forms requiring no clerical labor but the writing of the postmaster's signature, and will be payable at any post office. The fees chargeable for them being considerably less than those for money orders of like amounts, it is expected that they will supplant the use of money orders of small denominations. By reason of the simplicity of their form, their substitution for money orders will effect an obvious saving in labor, both at the issuing office, the paying office and in the central administration. Requiring no advice, they can, moreover, be issued by imprest or nonaccounting offices, to which they will be supplied for cash or its equivalent, in the same manner as stamps. This will, in turn, render unnecessary the continual increase in money order offices, and the ultimate consequence of their introduction will, therefore, be a permanent and progressive economy, not only in the transaction of money order business, but in the accounting operations of the entire service.

### Salient Features of the Scheme.

The Joint Commission has worked out in detail a provision for these postal notes and has embodied it in the codification of the postal laws which will soon be reported to the House by the Post Office Committee. The salient features of the plan are embraced in sections 575 to 579 of the codification bill, as follows:

Sec. 575. For the convenience of the public in the transmission of small sums through the mail the Postmaster-General may authorize postmasters at all money order post offices, and such other post offices as he may designate, to issue money orders without corresponding advices for fixed sums not exceeding \$5, such orders to be known as postal notes.

Sec. 576. The sums for which postal notes shall be issued shall be as follows: 20 cents, 25 cents, 30 cents, 40 cents, 50 cents, 60 cents, 70 cents, 75 cents, 80 cents, 90 cents, \$1, \$1.25, \$1.50, \$2, \$2.50, \$3, \$4 and \$5.

Sec. 577. The fees for the issuance of postal notes shall be as follows: For a note not exceeding 40 cents, fee 1 cent.

For a note exceeding 40 cents and not exceeding \$2.50, fee 2 cents. For a note exceeding \$2.50, fee 3 cents.

Sec. 578. To facilitate the transmission of amounts for which no corresponding postal note is provided, subsidiary postal notes may be issued in denominations of 1 cent, 2 cents, 3 cents, 4 cents, 5 cents, 6 cents, 7 cents, 8 cents and 9 cents, respectively. No fee or commission shall be charged for the issuance of such subsidiary notes, and they shall not be issued except to a purchaser of a note of higher fixed denomination for the purpose of enabling him to make up a sum greater than the amount of such note and less than the amount of the note of next higher denomination. No such subsidiary note shall be paid except in connection with a note of higher fixed denomination.

Sec. 579. All postal notes shall be issued on an engraved form with such water-marks or other safeguards against counterfeiting as the Postmaster-General may prescribe, and shall contain a blank space for the signature of the postmaster issuing the same and for the signature of the person to whom the same is paid. No postal note shall be valid unless issued on such form.

### Working Up "Sentiment" for Postal Notes.

The manner in which "sentiment" in favor of a postal currency has been systematically worked up during recent years has been fully exposed in *The Iron Age*. At a hearing before the House Post Office Committee when the so-called Post check currency bill was under consideration, it was developed that the "demand" for this currency existed solely in the minds of a few persons influenced by the work of a bureau located in Washington and managed by ex-post office officials, which had received the hearty co-operation of prominent catalogue houses. The literary bureau referred to, it was frankly admitted before the committee, had prepared large quantities of matter, which had been published in various newspapers and magazines as "current news," when, in fact, its preparation was paid for by the author of the Post check project. It was also admitted that the inventor of this scheme had held conferences with regard to it, which had been attended by representatives of prominent mail order houses, and that Sears, Roebuck & Co. had furnished data upon which arguments in favor of the measure had been based. Not the least important of the admissions made before the committee was the statement that ex-Auditor Henry W. Castle, whose indorsement of the Post check currency plan had been widely advertised as that of "a prominent unbiased postal expert," had been almost continually in the employ of the Post check bureau for several years.

### New Plan Is Different, but Underlying Principle Is the Same

It will, no doubt, occasion much surprise among readers of *The Iron Age* that with these disclosures on record the Joint Postal Commission should have recommended the authorization of a postal currency. This is explained to some extent, at least, by the fact that the plan proposed by the commission differs in many respects from that advocated by the literary bureau referred to, especially in that small fees will be charged for the notes and that they will not pass as legal tender. Even with these differences, however, the underlying principle is the same, and the tendency toward centralization of the business of the country is as apparent in the one scheme as in the other. Both are intended to facilitate the sending of money away from home for the purpose of making purchases, and either would prove a welcome adjunct to the mail order business.

### Retail Merchants Should Bestir Themselves.

No time should be lost by the retail merchants of the country in taking this matter up with their Representatives and Senators, and especially with Chairman Jesse Overstreet of the House Post Office Committee, who should be urged to amend the codification bill by striking out the postal note feature before reporting it to the House. Mr. Overstreet has done yeoman service for the retailers in the past, and inasmuch as the postal note feature of the codification bill undoubtedly weakens that measure it should not embarrass him to insist upon its elimination. The codification bill will not have an easy path through the House in any event, and it should be pointed out to Representatives and Senators that the postal note project is exceedingly unpopular and must prove a stumbling block in the way of this otherwise very desirable legislation.

## INTRODUCING AMERICAN MANUFACTURES TO THE FAR EAST.

**J.** W. OWEN, for many years with the New York Export & Import Company, 133-137 Front street, New York, is back in this country from the Far East, where he had charge of the company's branch in Singapore, Straits Settlements, which he established nearly six years ago. Other branches of this house are in Bombay, Calcutta, Rangoon, Shanghai, Hong Kong, Yokohama, Kobe, Cape Town, Sydney, Cairo and Alexandria, for the distribution of American products.

The first 18 years of Mr. Owen's business life were spent with the well-known houses of Sargent & Co., J. C. McCarty & Co., H. C. Marshall and American Axe & Tool Company in New York City. In 1901, desirous of a change and wishing to see something of the world, he went to Seattle, Wash., on business, and soon after to Nome, Alaska, and through the Bering Straits, finally locating permanently in Singapore. As he facetiously phrases it, he has been introducing almost everything of American manufacture, from Motor Cars to Aluminum Hair Pins.

### Introducing American Cylinder Mortise Locks

One achievement referred to with pardonable pride is the introduction and fitting, so far as he knows, of the only mortise cylinder Door Locks in Singapore. Although without previous training in carpentry he successfully fitted three Corbin cylinder mortise Locks and accompanying trim to doors in the office of Whiteaway, Laidlaw & Co., an English firm there, located in the Singer Sewing Machine Building. This enterprising house operates more than 30 general outfitting supply depots, somewhat on the department store plan, which extend from Bombay, western India, around and up the China Coast to Shanghai. This distinctive type of what has long been the accepted American Lock, manufactured by many different American makers, greatly increased the security, although operated by an exceedingly small key. It displaced immense wrought iron straps or staples of local production, extending the entire width of door and fastened to it with  $\frac{3}{4}$ -in. diameter Bolts. The real measure of security, however, was determined by the cheap Padlock used.

### Miscellaneous Goods Placed.

Among other lines introduced was general Hardware, but not much in what is known as Builders' Hardware. American tools go fairly well in China, and the better class of Chinamen are gradually learning to use them, so that they are slowly but surely making their way. Carriages, machinery, Electric Fittings, Boiler Tubes, &c., are also meeting with a demand. There is a good electric power plant in Singapore for tramways and lighting, thoroughly modern and up to date, the street cars being operated by a company, and the lighting system by the municipality. The great coming industry there, it is believed, is the production of Para Rubber, obtained from trees raised by planting nuts brought from Brazil.

The population of Singapore consists of from 250,000 to 275,000 Chinese, 3000 Europeans or whites and only 3 or 4 Americans. A feature of business there is that once a customer is made, with right treatment he can be held. As Singapore is but 1 degree of latitude north of the equator it is normally hot all the time. Mr. Owen asserted that he had not known of the thermometer recording below 80 degrees F. in his office during a stay exceeding five years.

One transaction recalled was the introduction of 250 Ceiling Fans, electrically driven, in the new Hotel d'Europe. The New York Export and Import Company maintains an office and sample room in Singapore, but carries no stock, this order being placed with a local English house in the city for execution.

John Wardrop has succeeded Beddall & Wardrop in the Hardware business in Mt. Carmel, Pa. Mr. Wardrop has had the management of the business from its inception July 1, 1894, so that the change in ownership will make no change in the conduct of the business.

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## Store Arrangements of the Fowler & Sellars Company.

### Concluding Article.

*In our last issue we described the general features of construction of this finely appointed establishment, giving also illustrations of some of its methods of accommodating and displaying Sporting Goods, Enamelled Ware, Ranges, Tackle Blocks, Chains, &c.*

### Farm and Garden Tools.

The provision made for farm and garden tools, shown in Fig. 8 includes bins for D Handled Shovels, Scoops, Spades and Forks. The bins are about 12 in. wide between partitions. Long Handled Forks, Shovels, &c., are stood on the top of the bins, the handles being held in place by hooks, with the hook part turned down, so as to prevent anything being hung on the hooks which would

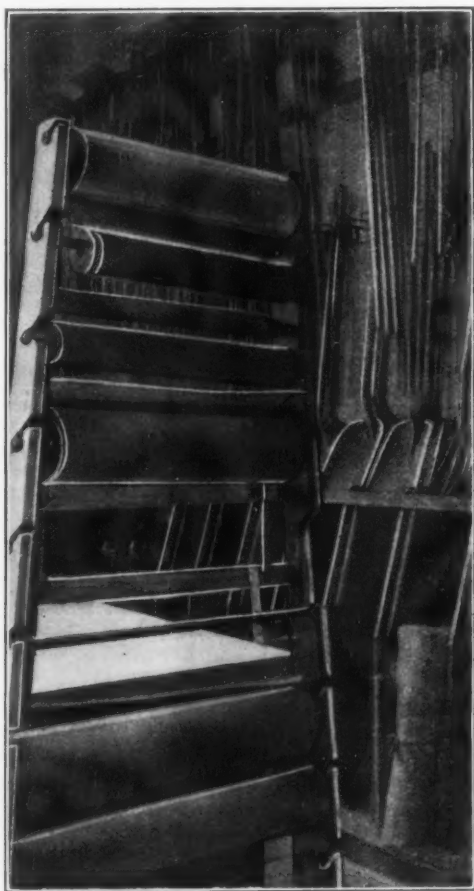


Fig. 8.—Arrangements for Farm and Garden Tools and Screen Wire Cloth.

interfere with the space designed for the handles. Above this line of goods there are four rows of hooks fastened to wooden strips on the wall, placed at heights to accommodate the different lengths of the Rakes and other goods hung on them with handles pointing down. The lower row of hooks is 48 in. above the bins, the second row 27 in. above the first, the third row 11 in. above the second, and the fourth row 11 in. above the third. In bins to the right of those shown D Handles, Cant Hooks, Crowbars, &c., are kept.

### An Advantageous Screen Wire Cloth Rack.

The point of interest in the Screen Wire Cloth rack, also shown in Fig. 8, is their strips of ash, two of which are fastened to cross pieces behind each roll of Cloth at such an angle that they press against the rolls until the Cloth has all been sold. The object of the strips is to prevent the rolls from unwinding as they diminish in diameter. It will be seen that the roll next to the top remains as tight as those which are of larger diameter. The rack is 88 in. high, and accommodates nine rolls of

Cloth, from 24 to 36 in. wide. The uprights are made of boards 5 in. wide and the rollers are of iron pipe, bronzed.

### Adjustable Partitions.

Shelving for colors in Oil, Varnish in cans, &c., is across the aisle from the Wire Cloth rack. The openings between uprights are 48 in., and the shelves are 12 in. apart. These openings are subdivided by sliding parti-

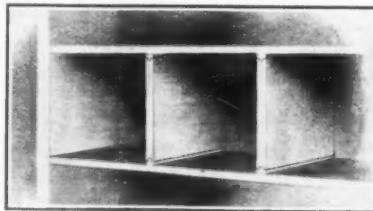


Fig. 9.—Adjustable Partitions in Paint Shelving.

tions of 1/2-in. boards, as shown in Fig. 9. Tongued strips are fastened with two brads above and below where the partitions are designed to go, and the grooved boards are slid in, as brought out in the illustration. This permits the opening to be divided at will into two or three smaller spaces, as the tongued pieces do not materially interfere with putting in goods when the sliding partitions are removed. The tongued pieces are only slightly fastened with brads, so that their location can be readily changed, if desired, to make openings of any width required.

### Plain Wire Rack.

The difficulty in preventing salesmen from opening new bundles of Plain Wire, when selling a few pounds, where bundles already open were tangled, led to the

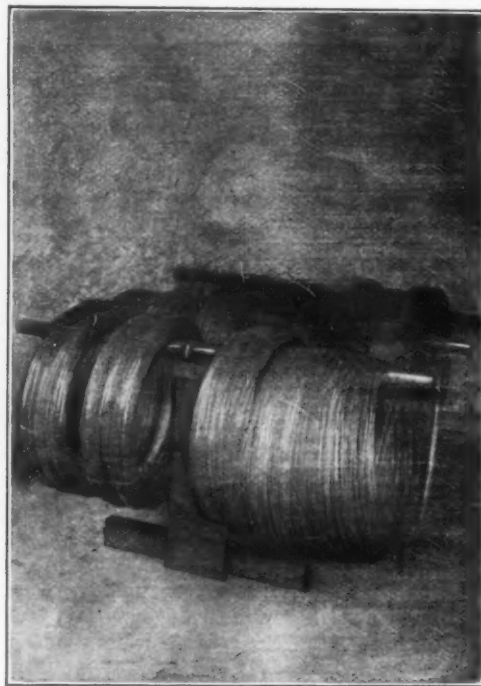


Fig. 10.—Wire Rack.

construction of the rack illustrated in Fig. 10. This is located in the cellar and fulfills its mission admirably. The rack is about 5 ft. long and 28 in. high, made of 2 x 8 in. stuff bolted together. It is braced from underneath the middle of the top piece to both legs. Three pieces of pipe 2 in. in diameter are bolted down with pipe straps, affording space for six sizes of Wire, three sizes on each side. The sizes carried in stock are 6, 8, 10, 12, 14 and 16 gauge.

### Iron and Steel Rack.

Those who have experienced the annoyance of Iron and Steel Rods and Bars refusing to follow the openings in racks, the uprights of which hold the iron cross pieces, will be interested in the rack illustrated in Fig. 11, which

was constructed in the cellar especially to remedy this difficulty. In the rack are 100 compartments, each  $6\frac{1}{2}$  in. wide and  $8\frac{3}{4}$  in. high. The partitions, which are continuous from end to end, are of rough 1-in. boards, 13 ft. long. Cross pieces are  $1\frac{1}{4}$  x 3 in. spaced about 28 in. apart. The rack was constructed by first placing cross pieces on the floor of the cellar and covering them the entire length and width with black sheet iron. Then the first partitions were stood on the top of the iron, cross pieces put on and these were covered with sheet iron as before, and thus one shelf after another was built from the bottom up. In this construction the upright partitions form the frame of the rack, which comprises in effect 100 parallelogram tunnels, 13 ft. long, each with a sheet iron bottom and top, and entirely separate from all others. When a Rod or Bar is started in any compartment it is impossible for it to run into any other

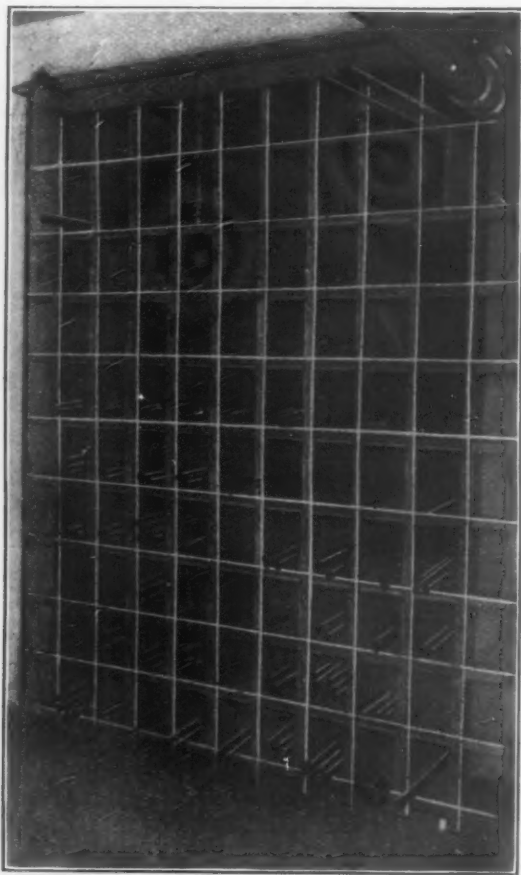


Fig. 11.—Iron and Steel Rack.

opening, and short pieces cannot drop through the bottom. The rack was made 13 ft. long simply because the lumber at hand at the time was that length. To accommodate Bars longer than 13 ft. an extension is built 3 ft. from the rear end of the rack, consisting of 3 x 6 in. wooden uprights, with cross pieces of pipe  $\frac{5}{8}$  in. in diameter. This extension affords support for the longer Rods and Bars.

#### Handling Rope.

The advantage of getting a straight up pull on Rope from coils in the cellar, without the disadvantage of having the ends brought up into the salesroom through holes in the floor is secured as shown in Fig. 12. After the cords around the coil are cut the end of the Rope is started from the center of the coil so as not to twist, run through a block above, and a knot is tied in the end of the Rope to prevent it running back out of the block. The burlap covering left on the coil keeps it in shape until all the Rope is sold.

#### Marking Room.

Another feature in the cellar is a room partitioned off where goods are unpacked and marked. The

room is approximately 10 x 36 ft. in size, divided from the main cellar by partitions of Poultry Netting stretched on 2 x 4 in. uprights, extending from the floor to the ceiling. The foundation walls form two sides of the room. At about the center of the long side of the room is a door in the wire partition, with lock. Daylight is supplemented by an electric arc light. Tables are provided for laying out the goods as they are unpacked. The room is under the direction of one salesman, who has the key. The advantages of this arrangement are that no goods are put in stock unmarked, and that all classes of goods, including expensive Revolvers and Pocket Cutlery, can be safely left locked in the room should the custodian be called away. All goods are unloaded at the back of the store and sent immediately to the cellar, so that confusion and dirt incident to unpacking goods in the salesroom is avoided.



Fig. 12.—A Straight Pull.

In addition to the goods already noted as being kept in the cellar, are Oils, Mixed Paints in racks, Nails, Poultry Netting, Wire Fencing, Wheelbarrows, Fertilizer, Barbed Wire, Stable Fixtures, Tarred Paper, Brick and Mortar Hods.

#### The Upper Floors.

On the second floor, which is also used as a salesroom, is a toilet room for ladies. On this floor are kept Lawn Swings, Oil Cans, Coal Hods, Garbage Cans, Brooms, Garden Barrows, Refrigerators, Stepladders, Oil Heaters, Hose Reels, Cook and Laundry Stoves, Corn Planters, Fodder Cutters, Hammocks, Wood and Willow Ware, Lamp Chimneys and Shades, Clothes Racks and Wringers and Watering Pots.

The third floor is used as a showroom for Harrows, mounted Grindstones and Garden Cultivators; also for Sleds, Snow Shovels, Seeds, Snaths, Lanterns, Handled Axes, and for carrying surplus stock of Door and Window Screens, Steel Goods, Brooms, Screens, Shelf and Builders' Hardware, &c.

On the fourth floor are Closet Hoppers, Bathtubs, Metal Lath, Furnace Pipe and Elbows, Radiators, Pipe Covering, Laundry Trays, &c.

Cook and Heating Stoves are stored on the fifth floor, where are also kept Flower Pots and Window Glass. Here, too, is a work bench and emery wheel for repairing Lawn Mowers, sharpening tools and other miscellaneous work.

"TEN MINUTES WITH TERRELL" is the title of a little booklet devoted to sharp, spicy talks about Steel Lockers, with special reference to those made by the Terrell's Equipment Company, Grand Rapids, Mich. In the course of these talks there are some interesting observations upon the sanitary advantages of Steel Lockers, economy and convenience from a business point of view, how they should be constructed to best meet the requirements and other topics relative to the subject.

DENNY BROS. have purchased the business of Thompson & Co, Harveyville, Kan., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Implements, Paints and Sporting Goods.



## LABELS FOR PAINT.

*To the Editor:* I have learned with much surprise that some of the retail Hardware associations, especially in the Middle West, are enthusiastically promoting the idea of Paint legislation, requiring the publication of the formula on the label. The gentlemen concerned probably know why they have adopted such an attitude, but to an outsider it is incomprehensible. It is as surprising as if these associations should decide that the mail order houses are a beneficent institution and should be encouraged by legislation.

### Aims to Correct Abuses.

On the face of it and at first sight the requirement of formula labels appears a natural and easy way of ending certain abuses which undoubtedly exist in the Paint trade, as they have always existed and always will exist in all lines of industry open equally to all classes and conditions of men. But before we apply a new remedy it is well to know something of its nature and effects.

### Formulas Do Not Indicate Value.

The formula label on a Paint can tell what a Paint is made of, not how or how well it is made, nor how carefully nor with what practical knowledge these ingredients have been selected and combined. Therefore, the formula does not actually indicate the value of the Paint as Paint.

### Injustice to Manufacturers.

Waiving the question of justice regarding laws which compel the manufacturer to publish without compensation the results of a lifetime of labor, thought and investment, let us ask how the Paint dealer, the Hardwareman, will be affected by the publication of the formula.

### Effect of the Law on Merchants.

Nearly every dealer makes a specialty of some one brand of Paint. It has probably given satisfaction to his trade or he would not continue to handle it. Its popularity and continued sale depend upon the satisfaction it has given, the advertising support the manufacturer accords it, and the relative price at which it is sold. Now let us suppose that in any given State all Paints must bear the formula label. This means that the ingredients, but not necessarily the quality, of the Paint can be duplicated by any one. Quality, however, is something that does not show in the formula. What is to prevent any "Cheap Jack" with a Paint mixer from offering to duplicate, at a cut rate, the formula of the Paint handled by any dealer? This has already happened on a scale that will increase as time goes on, in every State that has thus far adopted the formula labeling idea. If the dealer will not "bite" at the proposition, those manufacturers will go direct to the householder with their proposition, and with a parcel post law to help them there will be little left of the Paint trade in a few years.

### Homemade Paint.

### There is Another Danger

in this programme which appears to be generally overlooked. That is the inevitable tendency of such laws to reduce Paint to a commodity basis, like Nails, Fence Wire, White Lead, &c. Any dealer knows that his profits are made on trademarked, advertised articles, and that without these he could not continue in trade. Is it not suicidal for him to join in a movement which is sure to remove another of his specialties from the latter into the former class?

### Will Tend to Eliminate Small Manufacturers.

I pass over the inevitable tendency of such legislation to eliminate the small manufacturer and to force consolidation of the larger houses into trusts. I pass also over the inequity of singling out one industry for such an experiment in socialism, while cloth manufacturers, leather and shoe manufacturers, manufacturing jewelers, Hardware manufacturers, &c., are left undisturbed. If the present tendency continues unchecked the turn of all will come in due time. I wish to dwell for a moment only on a means by which all that ought to be demanded in the way of safeguarding the consumer can be obtained without sacrificing all chance of progress and improve-

ment in the Paint industry and compelling a reluctant trade to combine in trusts.

### Law Should Prohibit False Labeling.

There is no excuse except antiquity to offer for misrepresentation, false descriptions or misleading labels. There is no defense except trade custom to be offered for the short weight or short measure package. A law, carefully and sincerely drawn, forbidding these two abuses, under severe penalties, would accomplish for the Paint consumer all he has a right to ask and would save to the manufacturer the knowledge on which his industry is founded.

I trust that you will agree with me in these views and will lend your powerful aid in support of them.

G. B. HECKEL,

Editor *Drugs, Oils and Paints*.

PHILADELPHIA, PA., January 6, 1909.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

SENECA CHAIN COMPANY, Kent, Ohio: Artistic catalogue showing the many different styles of Chains manufactured at the company's plants. The catalogue is printed in two colors, with excellent half-tone illustrations. A feature of the book is practical and reliable information for Chain buyers.

WIARD PLOW COMPANY, Batavia, N. Y.: Catalogue No. 34, relating to Plows, Hay Rakes, Bean Harvesters, Corn Planters, Adjustable Weeders, Harrows, &c.

MACKIE-LOVEJOY MFG. COMPANY, West Thirteenth and Paulina streets, Chicago, Ill., New York salesroom, 438 Broadway: Catalogue No. 17, illustrating Garment Hangers, Bathroom Fixtures, Can Openers, Curling Irons, &c.

BRAINERD MFG. COMPANY, East Rochester, N. Y.: Supplement No. 3 to 1907 catalogue relating to Knobs, Pulls, Hasps, Corners, Handles, Hinges, &c.

J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass.: Catalogue devoted to Rifle Telescopes. Particular attention is called to the new Favorite Mount, with its attachments; the new side mounts for high power Repeating Rifles and the improved Ideal Detachable Mounts.

RUGG-BALL MFG. COMPANY, Greenfield, Mass.: Price-list, 1909, of Hand Hay and Lawn Rakes and Framing Pins.

DURAND STEEL LOCKER COMPANY, 125 Monroe street, Chicago, Ill.: Catalogue of Steel Lockers and Wardrobes, which are described as fireproof, sanitary, durable, interchangeable, ornamental and moderate in cost.

CLYDE CUTLERY COMPANY, Clyde, Ohio; U. J. Ulery Company, 7 Warren street, New York, export office: Catalogue No. 15, illustrating Butcher, Carving, Kitchen, Sticking, Skinning, Boning and Bread Knives, Ham Slicers, Cleavers, Steels, Hunters' Knives, &c.

THE OWENSBORO HARDWARE & IRON COMPANY, Owensboro, Ky., has just issued an illustrated catalogue and price-list of nearly 170 pages devoted to its Heavy Hardware department and including Blacksmiths' and Wheelwrights' Tools and Supplies. In addition the company handles Shelf Hardware, Stoves, Tinware, Mantles and Grates, Builders' Hardware, Sporting Goods, Guns and Ammunition, Wooden Ware, Building Material, &c. The company's building, devoted exclusively to the wholesale business, contains 56,000 sq. ft. of floor space.

THE CHILTON HARDWARE & FURNITURE COMPANY, Chilton, Wis., has been incorporated by Henry Deples, Joseph Hanert and Jacob Westenberger with a capital of \$40,000.

# FACTORY COST AND BUSINESS METHODS.

## RECORDS AND METHODS IN ESTIMATING AND CONTRACTING.

### Second Article.

In the first article a description was given of the manner in which a well-known contracting firm with power plant handles requests for quotations, and the business methods and records connected with the execution of an order.

### After the Acceptance of a Contract

the blue prints and specifications upon which an accepted proposition was based are turned over to the drafting room, where each line is separated and laid out with exact dimensions. After verification by the company's engineer these are sent to the firm giving the contract

Ohio Electric Light & Power Co.									
Date 1/17/08		Page		Job No. 476		Copies to DR., A. B. C. Mgr.			
No. Pcs.	Mark	Pipe and Bends	Kind of Pipe	Fig's Made of	Type of Joint	Drilling	Date to Shop	Record of Work	Shipped
1	2L	8"-90° Bend	T.V.	R.S.	1/2"	C.H.	1/8"		
1		3'6" R x 5'x6'							

Fig. 6.—Form for Drawing Off Material to Be Made in the Shop.—Actual Size, 7 x 5 In.

Ohio Electric Light & Power Co.										
Date 1/17		Page		Job No. 476		Copies to DR., A. B. C. Mgr.				
No. Pieces	Size and Line	HANGERS, SUPPORTS, ETC.			Drawing No.	Sheet No.	Date to Shop	Record of Work	Completed	Shipped
2	10" Steam	Roller Bearing Supports			13461	2	1/8			

Fig. 7.—Form for Drawing Off Hangers, Supports, &c.—Actual Size, 11 x 8 In.

for their O. K. All pipe, flanges, bends, joints, castings, &c., which are made in the shop are drawn off in triplicate on forms similar to Fig. 6. Hangers, anchors, supports, &c., are also drawn off in triplicate on forms similar to Fig. 7. The original of these two forms is sent to the shop tracing department, the second copy goes to the accounting department, and the last remains in the drafting room filed under the job number for future reference. Both job number and customer's name appear on the heading of Fig. 6. The space marked "page" is

This is important, especially where a time limit and fine are a part of the agreement.

### Purchase of Needed Material.

Material which must be bought outside is drawn off on a form like Fig. 8. This is also made out in triplicate, the copies being distributed similarly to those for shop material, except the tracer's copy, which is first sent to the purchasing agent. He fills in the space showing where he has placed the order, and inserts the purchase

Ohio Electric Light & Power Co.		
DATE 2/10/08		REGISTRATION NO. 9641
JOB NO. 476		
No. Pcs.	MARK	DESCRIPTION
2	5L	8" stop & check valves 1" x 1" for 200 lb pressure and 100° superheat.

PURCHASED FROM		Savo	
PURCHASE ORDER NO.		4275	
TO BE SHIPPED TO		Ohio E. L. & P. Co. Cleveland	
ORDERED BY		A.M.P.	
APPROVED BY		M.W.K.	

Fig. 8.—Form for Drawing Off Material to Be Bought.—Actual Size, 7 x 5 In.

for the number of the sheet, for use after the forms are put into a loose leaf binder. "Copies to" refers to the orders to start work sent to different foremen, the initials designating the various departments concerned. The first vertical columns on these two forms are to be used for a description of the goods, &c. The last columns are for tracers started after an order until it is completed.

SHIPPING INSTRUCTIONS									
Consigned to		Exalco Contracting Co., 90 Ohio E. L. & P. Co.		Date 2/10/08					
Address		Cleveland							
Via		N.Y.C. & L.S.							
Car No.		S.C.C. & S.L. 42141		Total weight 2116		Rate 26¢		per Cwt.	
Consigned as		Iron Pipe Fittings							
Marks									
Customer's Order		12746		Our Order 476		Loaded and Checked by J.B.		No. of Sheets 1	

Conservative Number	No. Pieces	Drawing No.	DESCRIPTION	Net Weight, Lbs.	Gross Weight, Lbs.
2L	1		8"-90° bend 3'6" R x 5'x6' with R.S. flgs	1100	
3L	1		8" Manifold 3'4 1/2" long 2-8" Nozzles	1016	

Fig. 9.—Shipping Sheet.—Actual Size, 9 x 8 In.



order number. The requisition number is also put on the purchase order, making a cross index. The tracer from this information is enabled to hurry the order along from time to time, making use of the tickler system in keeping after given promises. All of his material sheets are kept filed under the job number.

#### Shipping, Charging and Checking Material.

When the material is shipped the shipping clerk makes out a list of material on a form similar to Fig. 9. Four copies are made, one going to the job. The shipping clerk retains a copy and sends one each to the account-

NO. PIECES	MARK	SIZE	LENGTH	KIND OF PIPE	FLANGES	DRILLING
3	4E	1 1/2"	10' 6"	HT	R Steel	E.H.

Fig. 10.—Shop Order for Vanstone Work.—Actual Size, 5 1/2 x 8 In.

ing and tracing departments. The information contained in the first part of this form is necessary for getting out bills of lading, and the second in keeping the account. It is also important to have a copy of this form on the job by which to check off the material as received.

#### When an Order Is Started in the Shop

copies are made out for each operation and placed successively on a series of shelves or pockets. Horizontally they run out from the job number, and vertically they fall under the operations possible in the factory. It will be understood that the different job numbers are kept arranged numerically along the left side of this cabinet of pockets. To find what work is still to be done in the shop on job 476 the pockets, which run out

LENGTH OF PIPE				LENGTH OF ARC.		
NO. WANTED	MARK	SIZE	KIND OF PIPE	FLANGES	DRILLING	
1	10 S	10	FW	Roller steel	E.H.	

SCREW FLANGES TO BE MADE ON PIPE STEAM TIGHT AND SET WITH HOLES IN LINE

Fig. 11.—Shop Order for Special Bends.—Actual Size, 5 1/2 x 8 In.

horizontally from the job number, are consulted, finding one order only, and that under pipe bending.

#### Forwarding Operations.

When the first operation is completed the material is sent with the copy of the order for the first operation to the foreman of the next department. From the job or order number he is able to procure his instructions in the cabinet. When he has completed his part of the work he passes the first copy to the tracing clerk and his copy to the next department with the goods, &c. The department doing the last operation passes its copy to the shipping clerk, together with the finished material. He in turn issues the complete shipping sheet, Fig. 9.

#### Keeping Track of Busy and Slack Departments.

This system of keeping the orders in the shop also makes it possible to tell by a glance at the shop order cabinet what departments are busy and what are about out of work.

#### Blanks for Shop Orders.

Two of the blanks for shop orders are shown in Fig. 10, which is used for ordering Vanstone work, and Fig. 11, for special pipe bends. Raw material necessary for a workman with which to get out work is obtained from

Fig. 12.—Workman's Order for Material.—Actual Size, 3 3/4 x 2 3/4 In.

the storeroom on a form similar to Fig. 12. These are turned in to the stock clerk to enter on the cards already described, and are later checked up with the time sheets by the cost clerk. These shop forms all provide a place for the order or job number, which also serves as the tracing number in the shop.

The concluding article will describe the method of keeping track of costs, which has been adopted by this concern.

(To be continued.)

#### The Zanesville File Company.

THE Zanesville File Company is a new concern at South Zanesville, Ohio, organized November 27 last with a capital of \$10,000, paid in, of which David D. Lewis is president; H. C. Williams, secretary, and F. F. Kohler, treasurer. The company has secured a building located between the Pennsylvania tracks on the north side and the Zanesville & Wheeling tracks on the south side, with switches direct to shop from both roads, affording excellent shipping facilities. The production will approximate 150 dozen 8 and 10 in. Mill Files daily for the present. The company's specialty will be 6, 8, 10 and 12 in. Mill Files. A complete machine shop has been installed for the production of its own machines and hammers. Several good sized orders have already been booked to start up on. Mr. Lewis, the president, has had a large experience in the business, having started what was known as the Jamestown File Works, which was subsequently removed to New Comerstown, Ohio, in 1906, and is thoroughly familiar with the business.

#### Iwan Bros.' New Plant.

IWAN BROS., manufacturers of Post Hole Augers and Diggers, Drain and Mining Tools, Hay Knives, &c., are removing from Streator, Ill., to South Bend, Ind. They have already commenced manufacturing at the latter place and expect to have their office located there by the end of January. The new plant is located on a

branch of the Michigan Central Railroad. The forging room, which is 50 x 150 ft., is equipped with power hammers and presses, besides the usual complement of drills, grinders, polishers, &c. The forging furnaces are oil burning and power is supplied by motors. On the west of the shop is a 50 x 50 ft. boiler room, which is also intended for galvanizing and tinning. On the east is a 60 x 180 ft. two-story addition for finishing, stockroom and office. The firm states that it will be equipped to turn out its product with greater satisfaction to itself and to its customers than heretofore.

### The Hart & Cooley Company.

The Hart & Cooley Company, New Britain, Conn., New York office, 79 Chambers street, in its catalogue B illustrates a variety of lockers for different purposes. Among these are lockers designed primarily for armories, lodges, &c., where more than the ordinary paraphernalia must be accommodated. The fittings consist of six trouser hangers, four coat hooks and a shoe rack. Fittings can be furnished to meet local conditions. Another type of locker is built to work in connection with a fan which sucks the air out of the lockers and in this way gives increased ventilation. An exhaust fan is attached to a duct in the top of the lockers, which extends the length of a section, wholly concealed from view.

### The Kohler Garden Tools.

F. E. Kohler & Co., Canton, Ohio, are using a steel shank on their one and two prong weeding hoes in place of malleable shanks as heretofore. The firm directs attention to its weed extractor, dandelion spud and turf edgers, which are substantial steel tools attractively finished.

### Concrete Adjustable Finishing Tools.

The rapid increase in the use of concrete for building construction of all kinds in the past few years has emphasized the need of improved implements and tools for handling such work. The line of concrete finishing tools made by the Arrowsmith Concrete Tool Company, Arrowsmith, Ill., embody features of improvement which are

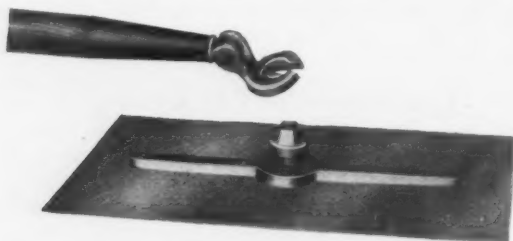


Fig. 1.—Concrete Trowel.

not only intended to develop speed and accuracy in finishing work, but also to minimize the labor required to secure these results. Fig. 1 shows the trowel with the jointed handle attachment which constitutes its distinctive feature. The handle is made long enough to enable a man to work in an upright position, and the slotted handle attachment allows free vertical or lateral movement without shifting the trowel. The handle is slipped on and



Fig. 2.—Concrete Edging Tool.

off without removing the nut, and though clamped tight enough to stand at any angle, can by a slight tap be raised or lowered. Fig. 2 shows the edging tool, which

is operated by the same handle used for the trowel. Special merit is claimed for the concave form of this tool, which permits work to be finished from the center backwards from the direction in which the tool is mov-

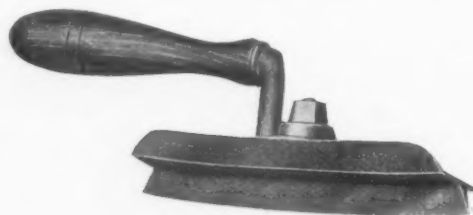


Fig. 3.—Concrete Emergency Handle.

ing, thus insuring a finish straight and close to the form. In Fig. 3 an emergency handle is shown, which can be used with either the jointer or the trowel. It is fitted with the same adjustable joint as the long handle, and, being set slightly back of the center, gives a balance that avoids straining or cramping of the hand.

### The Fuller All Steel Adjustable Scaffolding.

With a view to supplying scaffolding of combined strength, lightness and convenience, H. B. Fuller, 186-188 West Third street, St. Paul, Minn., is offering the equipment here illustrated. It is intended to meet the requirements of workmen whose equipment has to be frequently moved, adjusted and stored. The problem of providing safe and suitable scaffolding in building operations is one that usually involves a good deal of expenditure in material and labor, which not infrequently exceeds the cost of the particular work for which it is required. It often happens also that material so used is

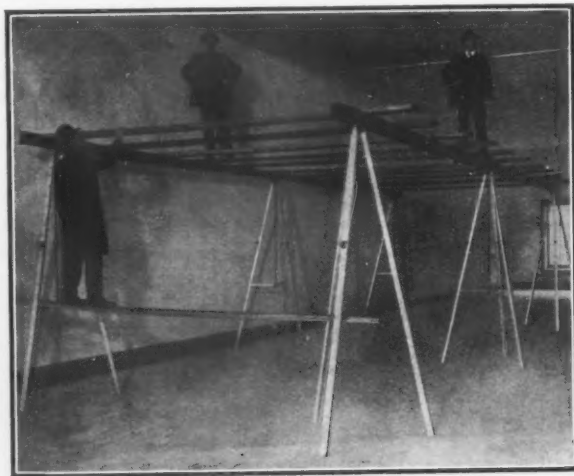


Fig. 1.—The Fuller All-Steel Adjustable Scaffolding.

of no value for a similar purpose on another job. The scaffolding shown in Figs. 1 and 2 is constructed entirely of steel, which together with its ease and speed in setting up, its lightness, strength and durability, and the wide range of adjustment afforded, comprises its distinctive features of merit. Both trestles and beams are formed of sheet steel pressed to shapes desired. The trestle legs, Fig. 3, are made of light pressed steel channels and form a telescoping and folding tripod. Beams of light construction are formed telescoping steel shells, each 10 ft. long, and are designed to be used in pairs. The inner sections of the tripod legs are provided with a series of holes, which with the automatic latch locking pin attached to the outer section constitutes the scheme of adjustment for elevation. The legs are hinged by strong rivets between lugs to the top casting. The latter is a flat disk 8 in. in diameter, having a wrought iron center pin projecting 6 in. above its surface to engage and hold the beams or planks which it supports. Below the casting the pin is threaded for connection with a union to a 3/4-in. steel tube which extends downward



and is of equal length with the upper leg section. The spread of the legs is controlled by braces of suitable length, to the outer ends of which are hinged lugs riveted to the inside of the regular channels. The legs are united at the center by a sliding collar, to which they are riveted and which slides freely on the center tube for the purpose of folding. All of the three legs of the

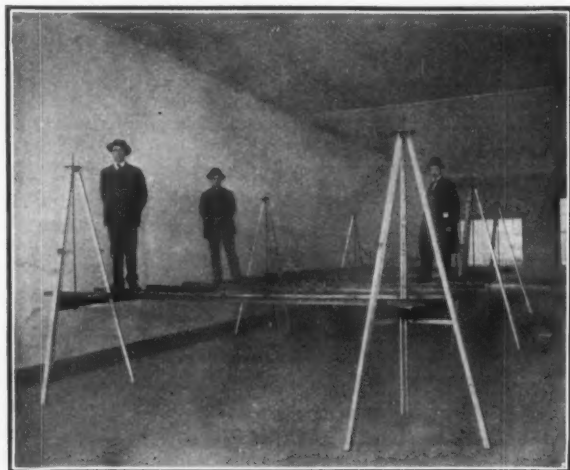


Fig. 2.—The Fuller Scaffolding at Half Height.

trestle may be independently adjusted for a level setting on uneven surfaces, such as sloping floors, stairways, &c., so that the tripod can be arranged to meet almost any conditions of surface irregularity within its range. Two sizes are kept in stock, No. 0, weighing 35 lb. each, made especially for plasterers and for all work under 12-ft. ceilings, and No. 1, weighing 45 lb., designed for all trades and purposes requiring support for work from the floor up to 18 ft. Special trestles either higher or lower than those described are made to order. The beams are about 4 in. wide on top and 5 in. at the bottom, with a depth of 4½ in., and the 10-ft. sections in which they are made weigh 27 lb. Holes are pierced in the upper side to engage the pins when the beam rests on the top of the trestle, and are designed to be used in

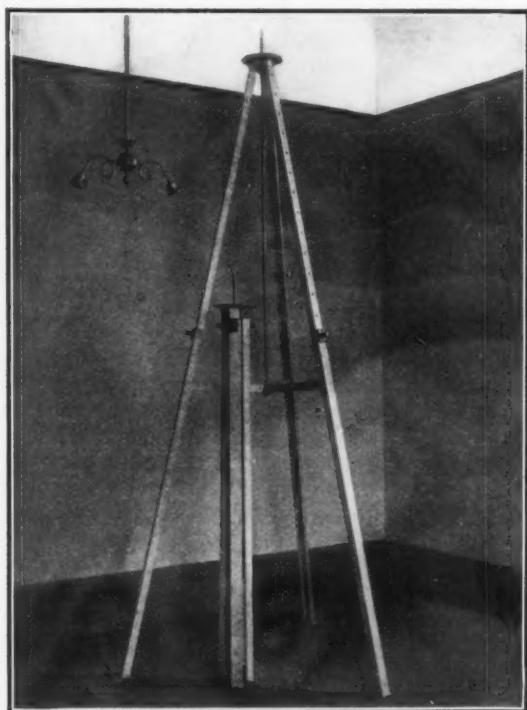


Fig. 3.—Trestle Opened and Closed.

pairs, for which purpose one is slightly smaller than the other so that they slide together with a lap of at least 2 ft., which is recommended for security. The beams in ordinary work will cover a span of 18 ft.; three of them

may be extended over a space of 26 ft. It may also be extended indefinitely over trestles set up for support at necessary intervals, thus a working or storage platform of any desired area may be constructed.

### Hayes Ratchet Handle Pumps.

The accompanying illustrations represent improvements in the ratchet handle pumps made by Hayes Pump & Planter Company, Galva, Ill., Fig. 1 showing a windmill lift standard. The cog gear leverage increases the power and causes the pump to work easily in deep wells, or permits the use of a large cylinder in shallow wells. The ratchet slide works against a roller bearing to reduce friction to a minimum. The pumps have a full 6-in. stroke, and the weighted handle can be increased in length for deeper wells or heavy work by inserting a longer pipe. The handle cogs are completely covered at every point of the stroke to afford protection against injury to the hand of the operator from coming in contact with cogs. The



Fig. 1.—Windmill Lift Standard.



Fig. 2.—Hand Top.

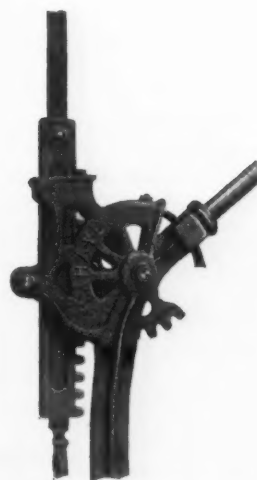
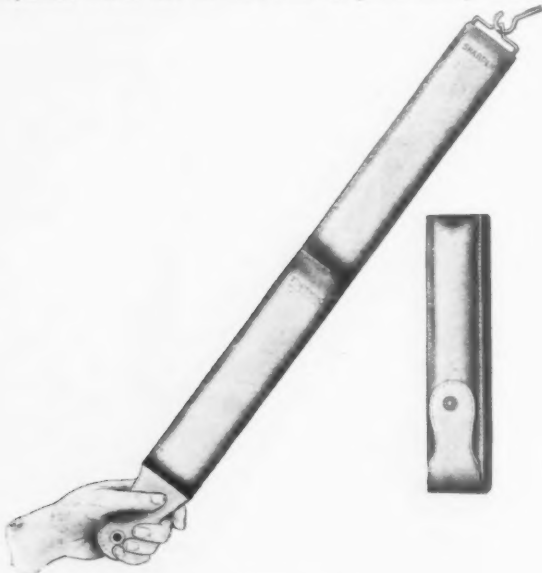


Fig. 3.—Windmill Top.

cog handle is constructed so that when worn it can be taken out and reversed, giving twice the wear. The pumps are fitted with large hard polished steel pins with long bearings, locked in position so that they cannot turn, and are furnished with either hand or windmill top. Fig. 2 shows the hand top with the handle lowered to its extreme point, illustrating the protection afforded by the cog guard. The pumps are readily adapted for windmill purposes with the special windmill top shown in Fig. 3, in which the handle is shown raised to illustrate the construction of the cog guard. With this style of top the trouble and annoyance of detaching the handle every time it is desired to change from a hand to a windmill pump is avoided. By removing the rod pin the windmill rod is free to work within the ratchet slide, which forms an excellent guide. The company makes the ratchet handle pumps in many styles: the divided cylinder force, plunger tube force, three-way tubular well, adjustable base lift and force, cast lift and force set lengths and standards.

### Folding Razor Strop.

The Case Cutlery Mfg. Company, Little Valley, N. Y., is putting on the market the Strophone folding razor strop here illustrated. It combines two firm stropping surfaces of different grades of leather, one for sharpening and the other for finishing, each 9 in. long, which can be folded over at the center and fastened with a flap and ball and socket snap, as shown. This is the form of the Strophone when not in use, and is particularly convenient

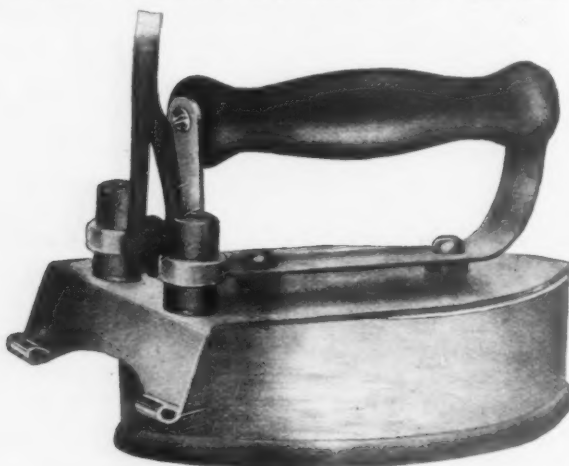


*Folding Razor Strop.*

for packing and carrying. The illustration also shows the device hung to a hook as in operation, although it may also be used by folding it inside out to bring the stropping surfaces outside and pulling the flap through the ring so as to form a stiff strop which may be rested on a table or other firm support. The company expresses the belief that with this strop the average man can keep his razor in better condition than with the ordinary swing strop.

### The Watson Electric Flat Iron.

The W. N. Durant Company, Milwaukee, Wis., is introducing the electric flatiron shown herewith, for which it makes special claims as to efficiency and durability. The company devotes its device to alternating current circuits and employs a magnetic coil of fireproof wire embedded in a casting of proper material. The heat is



*The Watson Electric Flat Iron.*

developed by hysteresis in the entire body casting, and as no part is ever hotter than the working surface, the danger of burning out is said to be entirely eliminated. An advantage in the iron is said to be its economy in the consumption of current. The 6-lb. iron, which is the most popular size, consumes less than 450 watts under working conditions and the 7½-lb. very little more. It is ex-

plained that the device is so insulated as to have a large heat storage capacity, retaining an ironing temperature for a considerable time after being disconnected. Four minutes is required to bring the iron to a working heat, distributed evenly over the entire bottom surface. A feature of the iron is its double pointed shape, and owing to the nicety of adjustment possible in the size of the magnetic coil, the irons can be furnished accurately tested out for any current from 100 to 120 volts of any frequency. No harm, however, can result from subjecting them to an overload of 15 per cent., it is explained. The handle connections and finish will retain their good appearance after considerable usage. When not in use the iron may be tipped back on the end of the handle and resting plate, or an iron stand with asbestos pad can be furnished. The terminals are provided with a flexible cord so connected that it will not kink or wear; the terminal plug is easily slipped off or on directly back of the handle to break or make connection.

### The Onward Sliding Furniture Shoe.

A radical departure from the ordinary wheel furniture caster is shown in the accompanying illustration, which represents a shoe made by the Onward Mfg. Company, Menasha, Wis., with Chicago office at 43 South Clinton street. This shoe, which is intended to serve the same purposes as a wheel caster, is constructed with a glass or porcelain base, fitted with a split spring stem, which prevents its dropping out when the furniture is lifted from the floor. It can, however, be easily removed, and will fit any hole not larger than the washer at its lower extremity. The pin is attached to the metal top of the porcelain base by a ball and socket joint, which allows



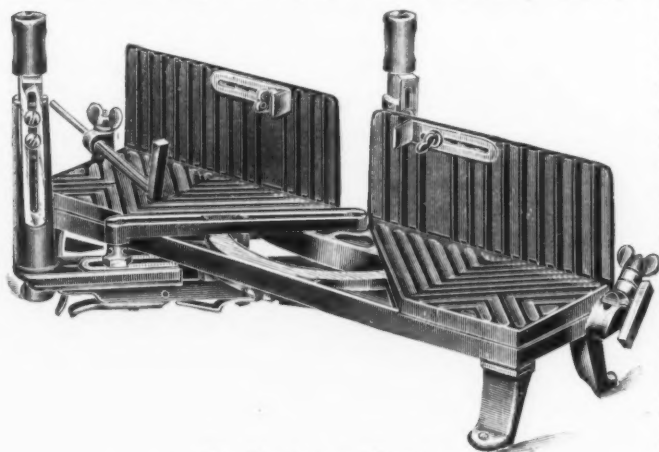
*The Onward Sliding Furniture Shoe.*

the shoe to adjust itself to uneven surfaces. It is claimed that pianos and other furniture can be slid along on these shoes without injury to the floor, carpet, linoleum or rug, and will not wrinkle rugs on a polished floor. The shoe is made in six sizes, from 1 to 3 in., with a special size, 4½ in., to fit all styles of pianos. They are made with nickel plated, bronze and palm oil tin housings and are packed six sets in a box, except in the three smaller sizes, which come 12 and 24 sets in a box, while piano shoes are packed one set in a box, a set consisting of four shoes. These sliding shoes are used in some of the principal metropolitan hotels. It is recommended that polished floors or new linoleum be coated with oil or floor wax before the shoes are used.

### The Marsh-Ayer Miter Box.

The H. C. Marsh Company, Rockford, Ill., is offering the miter box here shown. The bed and back are cast in one piece to give increased strength to the frame and to avoid the plates getting out of adjustment. They are ribbed to give clearance for sawdust, and the ribs are

designed to help hold the stock in position without marring it. An improved form of saw guide, stop entirely



The Marsh-Ayer Miter Box.

inclosed within the guide, and thus practically immune from injury, holds the saw in an elevated position while

the work is being adjusted and prevents the guides being withdrawn from the posts as the saw is raised. The stop is released by pressing down on the saw. In addition to notches for the positive and commonly used angles, there is a degree scale showing the actual angle of the saw. There is also a convenient device for securely locking the swinging lever at any angle, which is operated by means of the finger latch. Length gauges for duplicate lengths up to 18 in. may be swung instantly into position from behind the box, as they are set on a swivel, and may, if desired, be used as back rests for cutting angles more acute than 45 degrees. The stock gauges, near the top of the back, for cutting crown moldings, are conveniently located for clamping together several pieces that are to be cut simultaneously; it may also be left set when crown moldings and flat casings are being cut alternately, as in the case of inside finish with a back band. A feature of the box is the dull nickel finish, which is not paint, but an actual nickel plate. The saw guides, degree scale and all steel pieces are brightly polished. The box is made in two sizes—A, using saws 4 in. wide, 24, 26 and 28 in. long, and B, using saws 5 in. wide, 26, 28 and 30 in. long.

## PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—		China Clay, Imported.		Blue, Ultramarine.		Black Drop, English.	
	gal	ton	11.50@18.00		lb		5 @15
Linseed, Western, Raw.	51 @52	Cobalt, Oxide.	100 lb. 1.45@2.60	Brown, Vandyke.	11 @14	Black, Ivory.	16 @20
State, Raw.	51 @52	Whiting, Commercial.	100 lb. 12@32	Green, Chrome.	12 @16	Lamp, commercial.	4 @6
City, Raw.	52 @53	Gilders.	100 lb. 35@60	Green, Paris.	12 @16	Blue, Celestial.	4 @6
Boiled, 1¢ gal. advance on Raw.		Ex. Gilders.	100 lb. 60@65	Sienna, Raw.	12 @15	Blue, Chinese.	30 @32
Raw, Calcutta, in bbls.	70 @71	<b>Putty, Commercial—</b>		Sienna, Burnt.	12 @15	Blue, Prussian.	28 @30
Lard, Prime, Winter.	75 @76	In bladders.	\$1.70 @1.80	Umber, Raw.	11 @14	Blue, Ultramarine.	3 @15
Extra No. 1.	75 @76	In bbls. or tubs.	1.20 @1.15	Umber, Burnt.	11 @14	Brown, Spanish.	1 @1
No. 1.	75 @76	In 1 lb to 5 lb cans.	2.65 @2.95	<b>White and Red, Lead &amp;c.—</b>			
Cotton-seed, Crude, f.o.b. mill.	32 @34	In 1 1/2 to 5 lb cans.	1.50 @1.90	Lead, English white in Oil. 10% @10%			
Summer, Yellow, prime.	40 @42	<b>Spirits Turpentine—</b>		Lead, American White:			
Summer, White.	43 @45	In Oil bbls.	gal. 44 1/2 @45	Dry and in Oil, 100, 250 and			
Yellow Winter.	47 @50	In machine bbls.	45 @45 1/2	500 lb kegs. 7%			
Tallow, Acidless.	58 @59	<b>Glue—</b>		Dry and in Oil, 25 and 50			
Menhaden, Brown, Strained.	34 @35		lb	lb kegs. 7%			
Northern Crude.	34 @35	Cabinet.	12 @15	Dry and in Oil, 12 1/2 lb kegs. 7 1/2			
Southern.	34 @35	Common Bone.	7 1/2 @9	In Oil, 25 lb tin pails. 7 1/2			
Light Strained.	34 @35	Extra White.	18 @24	In Oil, 12 1/2 lb tin pails. 7 1/2			
Bleached Winter.	36 @37	Fish, liquid, 50 gal. bbls., per gal.	60 @1.20	In Oil, 1, 2, 3 and 5 lb tin			
Ex. Bleached Winter.	38 @40	lon	60 @1.20	cans. advance 8%			
Cocanut, Ceylon.	7 @7 1/2	Foot Stock, White.	12 @14	Red Lead and Litharge:			
Cochin.	7 @7 1/2	Foot Stock, Brown.	9 @11	In 100 lb kegs. 7 1/2			
Cod, Domestic, Prime.	37 @39	German Common Hide.	10 @12	In 25 and 50 lb kegs. 7 1/2			
Newfoundland.	39 @41	German Hide.	12 @18	In 12 1/2 lb kegs. 7 1/2			
Red Elaine.	41 @43	French.	10 @40	In lots of less than 500 lbs.			
Saponified.	6 1/4 @6 1/2	Irish.	13 @16	1 1/2 lb advance over			
Olive, Yellow.	1.15@1.50	Low Grade.	10 @12	above prices of White and			
Neatsfoot, Prime.	57 @58	Medium White.	14 @19	Red Lead and Litharge			
Palm, Lagos.	6 @6 1/2	<b>Gum Shellac—</b>		Lead, American, Terms: On lots of			
<b>Mineral Oils—</b>		Bleached, Commercial.	20 @21	500 lbs and over, 60 days, or 2% for			
Black, 29 gravity, 25@30 cold	13 @13 1/2	Bone Dry.	25 @26	cash if paid in 15 days from date of			
29 gravity, 15 cold test.	13 1/4 @14	Button.	30 @40	invoice.			
Summer.	12 1/2 @13	Diamond I.	30 @39	<b>Zinc, Dry—</b>			
Cylinder, light filtered.	20 1/2 @21	Fine Orange.	25 @30	American, dry. 5 1/4 @ 5 1/2			
Dark, filtered.	18 @19	A. C. Garnet.	20 @21	Red Seal (French process). 6 1/4 @ 7 1/2			
Paraffine, 903-907 sp. gravity.	11 1/4 @15	G. A. L. Garnet.	15 1/2 @16	Green Seal. 7 1/4 @ 7 1/2			
903 sp. gravity.	13 1/4 @14	Calc. Button.	18 @20	German Red Seal (French			
983 sp. gravity.	11 @11 1/2	D. C.	31 @32	process). 7 @7 1/4			
Red.	13 1/4 @14	Octagon B.	20 @21	Green Seal. 7 1/4 @ 7 1/2			
<b>Miscellaneous—</b>		T. N.	20 @21	White Seal. 8 1/4 @ 9 1/2			
Barites:		V. S. O.	20 @21	French, Red Seal. 8 1/4 @ 8 1/2			
White, Foreign.	100 ton \$18.50@20.50	<b>Colors in Oil—</b>		Green Seal. 10% @10%			
Amer. floated.	100 ton 17.30@18.30	Black, Lampblack.	12 @14	<b>Dry Colors—</b>			
Off color.	100 ton 12.50@15.00	Blue, Chinese.	36 @46	Black, Carbon. 6 1/2 @ 6 1/2			
Chalk, in bulk.	100 ton 3.90@3.40	Blue, Prussian.	32 @36	Black Drop, American. 3 1/2 @ 4			

# THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33½ @ 33½ & 10% signifies

that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33½%  
North's.....10%  
Upson's Patent, ½ gro., \$29.90.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....10%  
Ives' Stop Bead Screws and Washers.....10%  
Taplin's Perfection.....10%

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ½ doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.  
Fernald Quick Shifter, ½ doz. pairs.....\$2.00@3.00

## Anvils—American—

Eagle Anvils.....@ 8¢  
Hay-Budden, Wrought.....@ 9¢  
Trenton.....@ 9¢

## Imported—

Swedish Solid Steel Paragon, ½ lb.....10¢  
Swedish Solid Steel Sisco, Superior, ½ lb.....10¢  
Peter Wright & Sons, ½ lb, 84 to 319 lb, 1½¢; 350 to 600 lb, 1½¢.

## Anvil, Vice and Drill—

Millers Falls Co., \$18.00.....15¢

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths—

Livingston Nail Co.....10%

## Augers and Bits—

Com. Double Spur.....80¢@80¢10%  
Jennings' Patn., Bright, 65¢10¢70%  
Black Lip or Blued.....65¢@65¢5%  
Boring Mach. Augers.....70%  
Car Bits, 12-in. twist.....40¢10%  
Ford's Auger and Car Bits.....40¢5%  
Ft. Washington Auger Co., Concord's Auger and Car Bits.....25%  
Forrester Pat. Auger Bits.....25%  
C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list.....25¢7½%  
No. 30, R. Jennings' list.....30%  
Russell Jennings' list.....25¢10¢2%  
L'Hommedieu Car Bits.....45%  
Mayhew's Countersink Bits.....45%  
Pugh's Black.....20%  
Pugh's Jennings' Pattern.....35%  
Snell's Auger Bits.....60%  
Snell's Bell Hangers' Bits.....60%  
Snell's Car Bits, 12-in. twist.....60%  
Snell's King Auger Bits.....40%  
Swan's.....40%  
Swan's, Jennings' Pattern.....50%  
Wright's Jennings' Bits.....60%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's Pattern, No. 1, ½ doz., \$28; No. 2, \$18.....60¢10%  
Ford's, Clark's Pattern.....60¢@60¢10%  
C. E. Jennings & Co., Steer's Pat., 25%  
Lavigne Pat., small size, \$18.00; large size, \$26.00.....40%  
Swan's.....60%

## Gimlet Bits—

Common Dbl. Cut.....\$3.00@3.25  
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75

## Hollow Augers—

Bonney Pat., per doz.....\$5.50@6.00  
Ames.....20¢10%  
Universal.....20%

## Ship Augers and Bits—

Ship Augers.....40¢10¢7%  
Ford's.....33½%  
C. E. Jennings & Co.:  
L'Hommedieu's.....6%  
Watrous'.....33½%7½%  
Snell's.....48%

## Awl Hafts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00  
Unhanded, Shidred.....gro. 63¢@66¢  
Unhanded, Patent.....gro. 66¢@70¢  
Pop Awls:  
Unhanded, Patent.....gro. 31¢@34¢  
Unhanded, Shidred.....gro. 63¢@70¢  
Scratch Awls:  
Handled, Com.....gro. \$3.50@4.00  
Handled, Socket, gro. \$11.50@12.00  
Elmore Tool Mfg. Co.:  
Timners' and Brad Awls.....55¢7%  
Scratch Awls.....60%

## Awl and Tool Sets—See sets, Awl and Tool.

## Axes—

Single Bit, base weights: Per doz.  
First Quality.....\$4.75@5.00  
Second Quality.....\$4.25@4.50  
Double Bit, base weights:  
First Quality.....\$7.00@7.50  
Second Quality.....\$6.50@6.75

## Axle Grease—

See Grease, Axle.

## Axles—

Concord, Loose Collar.....4¼¢4½¢  
Concord, Solid Collar.....4½¢5¢  
No. 1 Common, Loose.....3¼¢4¢  
No. 1½ Com., New Style.....4¼¢4½¢  
No. 2 Solid Collar.....4¼¢4½¢  
Half Patent:  
Nos. 7, 8, 11 and 12.....70%  
Nos. 13 to 15.....70%  
Nos. 15 to 18.....70¢10¢70¢10¢5%  
Nos. 19 to 22.....70¢10¢70¢10¢5%

## Boxes, Axles—

Common and Concord, not turned.....lb. 5¢@6¢  
Common and Concord, turned.....lb. 6¢@7¢  
Half Patent.....lb. 9¢@10¢

## Bait—

Heudryx:  
A Bait.....20%  
B Bait.....25%  
Competitor Bait.....20¢5%

## Balances—

Caldwell new list.....30¢10%  
Pullman.....50¢10%

## Spring—

Light Spring Balances. 60¢@60¢5%  
Chatillon's:  
Light Spg. Balances.....50¢@50¢10%  
Straight Balances.....40¢@40¢10%  
Circular Balances.....50¢10%  
Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—

Steel Crowbars, 10 to 40 lb. per lb., 2¼¢@2½¢

## Towel—

No. 10 Ideal, Nickel Plate.....½ gro. \$8.50

## Beam, Scale—

Scale Beams.....40%  
Chattillon's No. 1.....30%  
Chattillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered ½ doz. \$0.80; Tinned.....\$0.85  
No. 11 Wire Coppered ½ doz. \$1.15; Tinned.....\$1.20  
No. 10 Wire Tinned.....½ doz. \$1.50

## Beaters Egg—

Dover Stamping & Mfg. Co.:  
Genuine Dover, per gro., No. 1, Tumbler Size, \$1.50; No. 2, Family Size, \$1.50; No. 3, Extra Family Size, \$24.00; No. 4, Hotel Size, \$30.00.

## Holt-Lyon Co.:—

Holt, per doz., No. 5, Jap'd \$0.80; No. A, Jap'd, \$1.15; No. B, Jap'd, \$1.85; No. 6, Jap'd, \$1.65; Lyon, Jap'd, per doz., No. 2, \$1.35.

## Taplin Mfg. Co.:—

Improved Dover, per gro., No. 60, \$6.00; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel, Tin'd, \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler, Tin'd, \$9.50; No. 300, Mammoth, per doz., \$25.00.

## Bellows—

Blacksmith, Standard List:

Split Leather.....60¢10¢65%  
Grain Leather.....50¢@50¢10%

## Hand—

Inch.....6 7 8 9 10  
Doz.....\$5.00 5.50 6.00 6.50 7.50

## Molders—

Inch.....10 12 14 16  
Doz.....\$7.50 9.00 12.00 15.00

## Bells—

Wrought Cow Bells.....75%  
Jersey.....75¢10%  
Texas Star.....50%

## Door—

Home, R. & E. Mfg. Co.'s.....55¢10%

## Hand—

Polished, Brass.....60¢10¢10%  
White Metal.....60¢10¢10%  
Nickel Plated.....50¢10%  
Sizing.....50¢10%  
Cone's Globe Hand Belts.....33½¢35%

## Miscellaneous—

Farm Bells.....lb. 2¼¢@2½¢  
Church and School.....60¢@60¢10%

## Belting—

First Quality, Ex. Hy., Strictly Short Lap.....60¢10%  
Standard.....70¢10¢70¢10¢5%  
Light Double.....75¢10%  
Cut Leather Lacing.....45¢@50%  
Leather Lacing Sides, per sq. ft. 25¢

## Rubber—

Competition (Low Grade).....70¢10¢75%  
Standard.....60¢10¢70%  
Best Grades.....40¢@50%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

Tire—

Green River Tire Benders and Upsetters.....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:  
Chain, Parts, Spokes.....50%  
Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks—

Common Wooden.....75¢@75¢5%  
B. & L. B. Co.:  
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50¢10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50¢10%; Wire Rope Snatch, 50%.

Lane's Patent Automatic Lock and Junior.....30%

## Boards, Stove—

Paper and Wood Lined.....55%  
Embossed.....55%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Keuffel & Esser Co.....33½%10%

## Bolts

Carriage, Machine, &c.—

Common Carriage (cut thread):  
¾ x 6 and smaller.....75¢5%  
Larger and longer.....70¢5%  
Common Carriage (rolled thread):  
¾ x 6, smaller and shorter.....75¢10¢5%  
Phila. Eagle, \$3.00 list.....80¢10%  
Bolt Ends, with C. & T. Nuts.....70¢10%

## Machine (Cut Thread):

¾ x 4 and smaller.....75¢10%  
Larger and longer.....70¢10%

## Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knobs:  
Inch.....3 4 5 6 8  
Per doz.....\$0.30 .35 .50 .60 .80

Cast Iron Spring Foot, Jap'd:  
Inch.....6 8 10  
Per doz.....\$1.20 1.50 2.25

Cast Iron Chain, Flat, Japanned:  
Inch.....6 8 10  
Per doz.....\$1.00 1.40 1.65

Cast Iron Flat Shutter, Jap'd, Brass Knobs:  
Inch.....6 8 10  
Per doz.....\$0.75 .95 1.25

Wrought Barrel Japanned:  
80¢10¢80¢10¢5%  
Barrel Bronzed.....60¢10%  
Spring.....70¢10¢70¢10¢10%  
Shutter.....50¢50¢50¢10¢5%  
Square Neck.....75¢75¢10%  
Square.....70¢10¢10¢80%  
Ives' Mortise Metal.....10%  
Ives' Wrought Metal.....10%

## Expansion—

F. H. Evans' Crescent.....40¢60%  
Richards Mfg. Co.....55¢10%  
Star Expansion Bolt Co.:  
Star Lag Screw Type.....60¢10¢5¢24%  
Star, Wood Screw Type.....40%  
Star, Machine, Single Wedge.....60%

Star, Machine, Double Wedge.....60%

Steward & Romain Mfg. Co.:  
Style No. 13, Double.....60%  
Style No. 1, Single.....60%  
Style No. 100, Dbl. Jaw, Single.....55%  
Lag Screw.....60%

## Plow and Stove—

Plow.....65¢5¢70%  
Stove.....85¢@85¢5%

## Tire—

Common Iron.....80%  
Norway Iron.....80%  
American Screw Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....82½%  
Bay State, list Dec. 28, '99.....80%  
Franklin Moore Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....82½%  
Eclipse, list Dec. 28, '99.....80%  
Russell Burdall & Ward Bolt & Nut Co.:  
Empire, list Dec. 28, '99.....80%  
Norway Phila., list Oct. '84.....80%  
Eagle.....82½%  
Shelton Co.:  
Tiger Brand, list Dec. 28, '99.....80%  
Phila., Eagle, list Oct. 16, 1884.....82½%  
Upson Nut Co.:  
Tire Bolts.....72½%

## Borers, Bung—

Borers Bung, Ring, with Handle:  
Inch.....1¼ 1½ 1¾ 2  
Per doz.....\$4.80 5.60 6.40 8.00  
Inch.....2¼ 2½  
Per doz.....\$8.65 11.50

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%  
Langdon, New Langdon and Langdon Improved, 20¢10%; Langdon Acme.....15¢10%  
Perfection.....40%  
Seavey.....45%

## Braces—

Common Ball, American.....\$1.50  
Barber's.....50¢10¢80¢10%  
Pray's Genuine Spoford's.....50%  
Pray's No. 61, 166, 206, 614.....50%  
C. E. Jennings & Co.....50¢5%  
Mayhew's Ratchet.....60%  
Mayhew's Quick Action Hay Pat.....50%  
Millers Falls Drill Braces.....25¢10%  
P. S. & W. Co., Peck's Pat.....60¢10%

## Brackets—

Wrought Steel.....75¢10¢5¢80%  
Bradley Metal Clasp.....80¢10¢80¢10%  
Griffin's Pressed Steel.....75¢75¢10%  
Griffin's Folding Brackets.....70¢10%  
Taplin Victor Handy Egg Bearer Bracket.....½ doz. \$1.50

## Bright Wire Goods—

See Wire and Wire Goods.

## Broilers—

Kilbourne Mfg. Co.....75¢20%  
Wire Goods Co.....75%

## Buckets, Galvanized—

M's list, price per gross:  
Quart.....10 12 14  
Water, Reg.....26.85 29.50 33.50  
Water, Irvn.....45.35 48.00 52.00  
Fire, Rd. Btm. 32.00 34.65 38.65  
Well.....37.35 41.35 45.35

## Bull Rings—See Rings, Bull.

## Butts—

Wrought, High List, Oct. 36, '06.65%  
Cast Brass, Tiebout's.....40¢10%

## Cast Iron—

Fast Joint, Broad.....40¢10¢50%  
Fast Joint, Narrow.....40¢10¢50%  
Loose Joint.....70¢10¢75%  
Loose Pin.....70¢10¢75%  
Mayer's Hinges.....70¢70¢5%  
Parliament Butts.....70¢70¢5%

## Wrought Steel—

Bright:  
Light Narrow, Light Reversible.....70¢5%  
Reversible and Broad, 70¢5%  
Loose Joint, Narrow, Light Inside Blind, &c.....70%  
Rack Flaps, Table Chest.65%  
Japanned:  
Light Narrow, Loose Pin.....40¢5%  
Light Narrow, Ball Tip.....60%  
Broad.....40¢5%  
Sterple Tipped.....70%  
Ball Tipped.....70%

Extra, 10¢

**Cages, Bird—**

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 .....30%  
Hendryx Bronze: Series 700, 800, 30%  
Hendryx Enamelled.....35%

**Calipers—See Compasses.****Calks, Toe and Heel—**

Blunt, 1 prong, per 100 lb., \$3.50 @ \$3.85  
Sharp, 1 prong, per 100 lb., \$4.00 @ \$4.35  
Burke's, 1 pg. Blunt Toe, 3/4 c; 2 pg. Blunt Toe, 4/4 c; 1 pg. Sharp Toe, 4/4 c; 2 pg. Sharp, 4/4 c; Blunt Heel, 4/4 c; Sharp Heel, 4/4 c  
Lautier, Blunt, 4/4 c; Sharp, 4/4 c  
Perkins, Blunt, 1/2 lb, 3.65 c; Sharp, 4.15 c

**Can Openers—**

See Openers, Can.

**Caps, Percussion—**

Eley's E. B. ....52 @ 55 c  
F. D. ....per M 3.00 @ 3.15  
F. L. ....per M 4.00 @ 4.15  
G. E. ....per M 4.80 @ 5.00  
Musket ....per M 6.50 @ 6.65

**Primers—**

Berdan Primers, \$2 per M. 20 c.  
Primer Shells and Bullets, 15 c @ 10%  
All other primers per M. \$1.52 @ 1.60

**Carpet Stretchers—**

See Stretchers, Carpet.

**Cartridges—**

Blank Cartridges:  
32 C. F., \$5.50 .....10 c @ 5%  
38 C. F., \$7.00 .....10 c @ 5%  
22 cal. Rim, \$1.50 .....10 c @ 5%  
32 cal. Rim, \$2.75 .....10 c @ 5%  
B. B. Caps, Con. Ball, Sieged, \$1.00  
B. B. Caps, Round Ball, \$1.10  
Central Fire, 25%  
Target and Sporting Rifle, 15 c @ 5%  
Primed Shells and Bullets, 15 c @ 10%  
Rim Fire, Sporting, 50%  
Rim Fire, Military, 15 c @ 5%

**Castors—**

Red .....65 c @ 10 @ 70%  
Plate .....60 @ 60 c @ 5%  
Philadelphia .....70 c @ 1.15 @ 75%  
Acme Ball Bearing .....35%  
Gem (Roller Bearing) .....70 c @ 10 @ 70%  
Steel Gem (Roller Bearing) .....70%  
Standard Ball Bearing .....45%  
Yale (Double Wheel) low list, 40 c @ 10%

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Proof Coil—**

American Coil, Straight Link:  
3-16 1/4 5-16 3/8 1/2 5/8  
\$7.70 5.10 4.15 3.50 3.30 3.10  
1/4-5/8-1 1/2 to 1 3/4 inch.  
\$3.00 3.10  
In case lots, deduct 25c.

German Coil, .....70%  
German Pattern Coil:  
6-0 to 1 .....70 c @ 10 c @ 5%  
2 and 3 .....60 c @ 10 c @ 70%  
4, 5 and 6 .....50 c @ 10 c @ 10 c @ 5%

**Halter—**

Halter Chains, .....60 c @ 50 c @ 10%  
German Pattern Halt:  
list July 21, '97, .....60 c @ 10 c @ 50%  
Covert Mfg. Co., .....35 c @ 5%

**Cow Ties—**

See Halters and Ties.

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.  
6 1/2-6-3, Straight, with ring, \$26.00  
6 1/2-6-2, Straight, with ring, \$27.00  
6 1/2-8-2, Straight, with ring, \$30.00  
6 1/2-10-2, Straight, with ring, \$35.00  
NOTE.—Add 2c per pair for Hooks  
Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.  
Eastern Standard Traces, Wagon Chain, &c., .....70%

**Miscellaneous—**

Jack Chain, list July 10, '93:  
Iron .....60 c @ 10 c @ 50 c @ 10%  
Brass .....65%  
Safety and Plumbers' Chain, 75%  
Gal. Pump Chain, 1 lb., 4 1/2 c @ 5%  
Bridgeport Chain Co.,  
Triumph Halter and Coll., 35 c @ 2 1/2 c @ 40%  
Triumph Dog .....50 c @ 10 c @ 60%  
Brown Halter and Coll., 45 c @ 50 c @ 5%  
Covert Mfg. Co.,  
Breast, Halter, Heel, Rein, Stallion .....40%  
Oneida Community,  
American Halter, Dog and Kennel Chains .....35 c @ 2 1/2 c @ 10%  
Niagara Dog Leads and Kennel Chains .....45 c @ 50 c @ 5%  
Wire Goods Co.,  
Dog Chain .....70%  
Universal Dbl-Jointed Chain .....70%

**Chain and Ribbon, Sash—**

Oneida Community:  
Steel Chain .....60%  
Pulman:  
Bronze Chain, 60%; Steel Chain, Coppered .....60 c @ 10%  
Sash Chain Attachments, per set, 8 c  
Aluminum Sash Ribbon, per 100 ft., \$2.00 @ \$5.00  
Sash Ribbon Attachments, per set, 8 c

**Chalk—**

Carpenters' Blue, .....gro., 50 c  
Carpenters' Red, .....gro., 50 c  
Carpenters' White, .....gro., 10 c

**Checks, Door—**

Bardsley's .....45%  
Pulman, per gro., .....55 c @ 10%  
Russwin .....35 c @ 5%

**Chests, Tool—**

American Tool Chest Co.:  
Boys' Chests, with Tools, .....35%  
Youths' Chests, with Tools, .....35%  
Gentlemen's Chests, with Tools, 30%  
Farmers' Carpenters, etc., Chests, with Tools .....20%  
Machinists' and Pipe Fitters' Chests, Empty .....45%  
Tool Cabinets .....15%  
C. E. Jennings & Co.'s Machinery Tool Chests .....75 c @ 10%

**Chisels—**

Socket Framing and Firmer Standard List, 80 c @ 10 c @ 80 c @ 10%

Buck Bros. ....30%  
C. E. Jennings & Co., Nos. 191, 181, 25%  
L. & I. J. White & Co., 30 c @ 50 c @ 5%

**Tanged—**

Tanged Firmers, 30 c @ 50 c @ 35%

Buck Bros. ....30%  
C. E. Jennings & Co., Nos. 191, 181, 25%  
L. & I. J. White & Co., 30 c @ 50 c @ 5%

**Cold—**

Cold Chisels, good quality, 13 c @ 15 c  
Cold Chisels, fair quality, 11 c @ 12 c  
Cold Chisels, ordinary, 9 c @ 10 c  
Elmore Tool Mfg. Co.,  
Cold Chisels, .....50 c @ 5%

**Chucks—**

Almond Drill Chucks, .....35%  
Almond Turret Six-Tool Chuck, 40%  
Beach Pat, each \$8.00, .....35 c @ 5%  
Empire .....25%  
Blacksmiths' .....25%  
Jacobs' Drill Chucks, .....35%  
Pratt's Positive Drive, .....25%  
Skinner Lathe Chucks:  
Independent .....35%  
Universal, Reversible Jaws, .....35%  
Universal, Com. Style Jaws, .....35%  
Combination, Reversible Jaws, .....35%  
Combination, Com. Style Jaws, .....40%  
Round Body or Box Body, 2 Chuck Jaws .....25%  
Geared Scroll Chucks, .....25%  
Drill Chucks:  
New Model, 25%; Geared Patent, 25%; Skinner Patent, 25%  
Positive Drive, .....40%  
Planer Chucks, .....20%  
Standard .....45%  
Drill Press Vises, .....30%  
Face Plate Jaws, .....35%  
Standard Tool Co.,  
Improved Drill Chuck, .....45%  
Union Mfg. Co.,  
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21, .....35%  
Scroll Combinations, Nos. 83 and 94 .....30%  
Geared Scroll, Nos. 33, 34 and 35, 25%  
Independent, Nos. 18 and 318, 35%  
Independent Steel No. 64, .....25%  
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104, .....35%  
Union Czar Drill, .....25%  
Universal, 11, 12, 16, 17, 13, 14, 15, 40%  
Universal No. 42, .....35%  
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50, .....35%  
Steel Face Plate Jaws, Nos. 70 and 72 .....30%  
Westcott Patent Chucks:  
Lathe Chucks, .....50%  
Little Giant Auxiliary Drill, .....50%  
Little Giant Double Grip Drill, .....50%  
Little Giant Drill, Improved, .....50%  
Oneida Drill, .....50%  
Scroll Combination Lathe, .....50%  
Whitaker Mfg. Co.,  
National Drill, .....25%

**Clamps—**

Carriage Makers', Star, P., S. & W. Co., .....50%  
Resly, Parallel, .....33 c @ 10%  
Hammer & Co.,  
Adjustable .....20 c @ 5%  
Carriage Makers' H. P. Screw, 40 c @ 5%  
Myers' Hay Rack, .....50%  
Lineman's Swedish Neverturn, .....45%  
Saw Clamps, See Vises, Saw Filers'

**Cleaners, Drain—**

Ivan's Champion, Adjustable, .....50%  
Ivan's Champion, Stationary, .....40%

**Sidewalk—**

American Fork & Hoe Co.,  
Star, 9 doz., Socket, \$4.00;  
Shank, 9 doz., X 7/8, \$3.50; Shank, X 8 .....\$3.75

**Cleavers, Butchers—**

Foster Bros. ....30%  
F. R. Plumb, .....30%  
L. & I. J. White & Co., .....30%

**Clippers, Horse and Sheep—**

Chicago Flexible Shaft Co.,  
1902 Chicago Horse, each, \$10.75  
20th Century Horse, each, \$5.00  
Lightning Belt Horse, each, \$15.00  
Chicago Belt Horse, each, \$20.00  
Stewart's Enclosed Gear Roll Bearing Horse, each, \$6.75  
Stewart's New Model Sheep Shearing Machine, each, \$12.75  
Stewart Enclosed Gear Shearing Machine, No. 8, each, \$9.75

**Clips, Axle—**

Regular Styles, list July 1, '05, 80 c @ 80 c @ 10%

**Cloth and Netting, wire—**

See Wire, &c.

**Cocks, Brass—**

Hardware list:  
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. ....75%  
Compression Bibbs, .....70%

**Coffee Mills—**

See Mills, Coffee.

**Collars, Dog—**

Nickel Chain, Walter B. Stevens & Son's list, .....40%  
Leather, Walter B. Stevens & Son's list, .....40%

**Compasses, Dividers, &c.—**

Ordinary Goods, .....75 c @ 75 c @ 5%

**Conductor Pipe,—**

L. C. L. to Dealers:  
Gal. Steel. Charcoal, Copper.

**Northeastern:**

70 c @ 10% 50 c @ 10 c @ 7 1/2% 50 c @ 10%

**Eastern:**

70 c @ 10% 50 c @ 10 c @ 7 1/2% 50 c @ 10%

**Central:**

75 c @ 5% 60% 50 c @ 10%

**Northwestern:**

75 c @ 5% 60% 50 c @ 10%

**Western:**

70 c @ 7 1/2% 50 c @ 12 1/2% 50 c @ 5%

**Tennessee:**

70 c @ 10% 50 c @ 12 1/2% 50 c @ 10%

**Southern:**

70% 50 c @ 12 1/2% 50 c @ 5%

**Southwestern:**

70% 50 c @ 5% 50 c @ 5%

Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered. See also Easy Troughs.

**Coolers, Water—**

L. & G. Mfg. Co.,  
Gal. ....2 3 4 6 8  
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00  
Galvanized, Lined, side handles,  
Gal. ....2 3 4 6 8  
Each .....\$1.95 \$2.15 \$2.40 \$3.30 \$1.15  
White Enamelled, .....10%  
Agate Lined, .....10%

**Coppers' Tools—**

See Tools, Coppers'.

**Coppers, Soldering—**

Soldering Coppers, 3 lb. to pair and heavier, 2 1/2 c; lighter than 3 lb. to pair, .....23 1/2 c

**Cord—**

Braided, Drab, .....lb. 35 c  
Braided, White, Com., Nos. 8 to 12, 22 c; No. 7, 22 1/2 c; No. 6, 23 1/2 c. In lots of 12 doz. or over, 1 cent less per pound.

Cable Laid Italian, lb., No. 18, 37 c  
Italian, lb., A, No. 18, 25 c; B, 22 c  
Common India, .....lb. 11 c @ 11 1/2 c  
Cotton Sash Cord, Twisted, 18 c @ 20 c  
Patent Russia, .....lb. 20 c  
Cable Laid Russia, .....lb. 21 c  
India Hemp, Br'd'd, .....lb. 21 c  
India Hemp, Twisted, lb. 13 c @ 14 c  
Patent India, Twisted, lb. 17 c  
Pearl Braided, cotton, No. 6, 1/2 lb. 20 1/2 c; No. 7, 19 1/2 c; Nos. 8 to 12, 19 1/2 c. In 12 doz. to 100 doz. lots, Edystone, Nos. 8 to 12, 25 c; 7, 26 1/2 c; 6, 27 1/2 c.  
Harmony Cable Laid Italian, Nos. 7 to 10, .....lb. 23 c  
Pulman:  
Wire Sash Cord, .....10%  
Sash Cord Attachments, per 100, \$2.00  
Samson, Nos. 8 to 12:  
Drab Cotton, 55 c; Italian Hemp, 40 c @ 55 c; Linen, 65 c; White Cotton, 50 c; Spot Cord, .....50 c  
Massachusetts, White, 1/2 lb 40 c  
Massachusetts, Drab, 1/2 lb 45 c  
Phoenix, White, Nos. 8 to 12, 27 c  
Silver Lake, per lb.:  
A, Drab, 45 c; A, White, 40 c; B, Drab, 40 c; B, White, 35 c; Italian Hemp, 40 c; Linen, 57 c @ 55 c. See also Chain and Ribbon.

**Wire, Picture—**

Full Length, .....90 c @ 90%  
Short Length, .....30 c @ 20%  
Hendryx Standard Wire Picture Cord, old list, 85 c @ 10%  
Turner & Stanton Co. Wire Picture Cord .....90%

**Cradles—**

Grain .....50%

**Crayons—**

White Round Crayons, Cases, 100 gro., \$8.00, \$8.50, \$9.00 and \$10.00 according to grade.

Zelicker's Lumber:  
White and Purple, Indolite, \$7.50  
Blue, Red, Green, Yellow and Terra Cotta, \$6.50; Black, \$4.50  
Giant Lumber, 5 1/4 in. x 15-16 in. round, all colors, \$12.00; Indolite, \$14.00; Blacks, .....\$10.00  
Genuine Soapstone, Metal Workers', 5 in. x 1/4 in. Round, \$2.50; 5 in. x 1/4 in. Square, \$1.75; 5 x 1/4 x 3-16, \$2.50; 5 x 1 1/4 x 3-16, .....\$3.00  
Suremark, Black, \$2.25; Blue, Red and Yellow, .....\$2.50

**Crooks, Shepherds—**

American Fork & Hoe Co.,  
Montana .....1/2 doz. \$1.50

**Crow Bars—See Bars, Crow.****Cultivators—**

American Fork & Hoe Co.,  
Victor Garden, .....50 c @ 10%

**Cutlery, Table—**

International Silver Company:  
No. 12 M'd'm Knives, 1847, 1/2 doz. \$3.50  
Star, Eagle, Rogers & Hamilton and Anchor, .....1/2 doz. \$3.00  
Wm. Rogers & Son, 1/2 doz. \$2.50

**Cutters—**

Glass.....

H. H. Mayhew Co., .....40%  
Red Devil, .....60%  
B. Mfg. Co., .....40%  
Woodward .....50%

**Meat and Food—**

Nos. ....30%  
Each, \$1.05 \$1.02 \$1.00 \$1.12 \$1.25 \$1.50 \$1.60 \$1.75  
Enterprise:  
Nos. ....5 10 12 22 32  
Each, \$2.32 \$2.75 \$1.50 \$6 25 c @ 7 1/2%  
No. 202, \$1.50 .....10 c @ 7 1/2%  
P. S. & W. Co.,  
Ideal .....10 c @ 10 c @ 5%  
Hales .....60 c @ 5%  
Little Giant, .....1/2 doz. 40 c @ 50%  
Nos. 305 210 212 220 222  
\$35.00 \$10.00 \$14.00 \$72.00 \$68.00  
New Triumph No. 605, 1/2 doz. \$24.00, 40%

Russwin Food, No. 1, \$21.00; No. 2, \$27.00; 3, \$12.00, .....15 c @ 10 c @ 10%  
Enterprise Beef Shavers, .....50 c @ 30%

**Siaw and Kraut—**

Henry Daston & Sons:  
Slaw and Kraut Cutters, .....35%  
Corn Graters, .....30%  
J. M. Mast Mfg. Co.,  
Slaw Cutters, 1 Knife, 1/2 doz. \$3.00  
Combined Slaw Cutter and Corn Grater, .....1/2 doz. \$4.00

**Tobacco—**

All Iron, Cheap, 1 doz., \$1.25 @ 1.50  
Enterprise, .....25 c @ 30%  
National, 1/2 doz., No. 1, \$2; No. 2, \$18 .....40%

**Diggers, Post Hole, &c—**

Disston's:  
Rapid, 1/2 doz., \$24.00 .....25%  
Samson, 1/2 doz., \$34.00 .....25%  
Ivan's Pat. Post Hole and Well Auger .....40%  
Vaughan Pattern Post Hole Augers, .....1/2 doz., \$7.00  
Perfection Post Hole Diggers, 1/2 doz., \$8.50  
Split Handle Post Hole Diggers, 1/2 doz., \$7.50  
Hercules Pattern, 1/2 doz., .....\$9.50  
Kohler's, 1/2 doz., Universal, \$14.00;  
Little Giant, \$12.00; Hercules, \$10.00; Invinible, \$9.00; Rival, \$8.50; Pioneer, .....\$7.50  
Never-Break Crucible Steel Post Hole Diggers .....60%

**Dividers—See Compasses.****Drawing Knives—**

See Knives, Drawing.

**Dressers Emery Wheel—**

Sterling Emery Wheel Dressers, .....35%  
Sterling Wheel Dresser Cutters, .....35%

**Drills and Drill Stocks—**

Blacksmith's Common Drilling Machines, .....\$1.50 @ 1.75  
Breast, Millers Falls, .....15 c @ 10%  
Breast, F., S. & W., .....33 c @ 10%  
C. & C. Ratchet, .....25%  
Reversible Ratchet Die Stocks, .....25%  
Goodell Automatic Drills, 50 c @ 10 c @ 60 c @ 10%  
Millers Falls Automatic Drills, "Graves", per doz., Nos. 1, \$4.86; 2, \$8.16.  
Millers Falls Automatic Drills, 33 c @ 10%  
Ratchet, Curtis & Curtis, .....25%  
Ratchet, Parier's, .....40%  
Ratchet, Weston's, .....40%  
Ratchet, Weston's, Style H Improved, .....40 c @ 40 c @ 5%  
Ratchet, No. 012, .....40 c @ 40 c @ 5%  
Ratchet, Celebrated, .....40 c @ 40 c @ 5%  
Ratchet, Whitney's, P., S. & W., .....40 c @ 100 c @ 50%  
Whitney's Adjustable, No. 10, \$12.00, .....33 c @ 4%

**Twist Drills—**

Rit Stock, .....70 c @ 50 c @ 70 c @ 10%  
Taper and Straight Shank, .....65 c @ 10 c @ 70%

**Drivers, Screw—**

Screw Driver Bits, per doz. 45 c @ 50 c  
Balsey's Screw Holder and Driver, 1/2 doz., 2 1/4-in., \$6; 4-in., \$7.50; 6-in., \$9  
Buck Bros.' Screw Driver Bits, .....30%  
Champion .....50%  
Disston's .....70%  
Elmore Tool Mfg. Co.,  
Hartford .....66%  
Indestructible .....55 c @ 5%  
Standard Neverturn, .....66%  
Star .....75 c @ 5%  
Screw Driver Bits, .....25%  
Fray's Hall's H'dle Sets, No. 3, \$12.50  
Ford's Brace Screw Drivers, .....40 c @ 10%  
Fay's Double Action Ratchet, .....35%  
Goodell's Auto, .....65 c @ 65 c @ 10%  
Mayhew's Black Handle, .....40%  
Mayhew's Monarch, .....40%  
Millers Falls, 1/2 doz., Nos. 11, \$9.95; 12, \$13.75; 20, \$8.17; 21, \$8.46; 41, \$13.45; 42, \$17.21.  
Smith & Hemenway Co., Neverturn, 66%; Elmore, 60%; Star, 30 c @ 10%

Swan's:  
Nos. 7565 to 7568, 60%; No. 7540, 40 c @ 10%

**Eave Trough, Galvanized—**

Territory, Gal. Steel, Copper.

Northeastern, 75 c @ 10 c @ 5% 50 c @ 10%  
Eastern, .....80% 50 c @ 10%  
Central, .....80 c @ 10 c @ 5% 50 c @ 10%  
Northwestern, 80 c @ 10 c @ 5% 50 c @ 10%  
Western, .....80 c @ 5% 50 c @ 10%  
Tennessee, .....80 c @ 5% 50 c @ 10%  
Southern, .....75 c @ 10% 50 c @ 5%  
Southwestern, 75 c @ 10 c @ 5% 50 c @ 5%

Terms.—2% for cash. Factory shipments generally delivered.  
Note.—Lower prices are made in some sections.  
See also Conductor Pipe and Elbows.

**Elbows and Shoes—**

Factory shipments, all territories:  
Galv. Steel, Galv. C. I. and Copper.  
Sizes 2, 3, 4, .....30%  
Sizes 1 1/2, 2 1/2, 3 1/2, 5, 6, .....60 c @ 10%  
No. 26, .....50%  
No. 29, .....25%  
Copper Elbows, .....50%

**Elbows, Stove Pipe—**

Edwards, Standard Blue



10-lb. cans, 7¢ 6¢  
 10 in. cans, less than 10, 10¢ 8¢  
 Less quantity, 10¢ 10¢ 8¢  
 NOTE.—In lots 1 to 3 tons a discount of 10% is given.

**Extensions, Bit—**  
 Ford's Auger Bit Extensions, 40¢5¢  
**Ext. actors, emon Juice—**  
 —See Squeezers, Lemon.

**Fasteners, Blind—**  
 Zimmerman's Jap'd and Galv., 50¢  
 57; Bronze and Plated, 50¢  
 Walling's, 50¢  
 Upson's Patent, 40¢

**Cord and Weight—**  
 Ives, 1/2 gro., \$1.08, 10¢  
 Titan, 1/2 gro., \$0.65, 10¢  
**Corrugated—**  
 Acme Corrugated Fasteners, 70¢

**Faucets—**  
 Cork Lined, 50¢10¢60¢  
 Metallic Key, Leather Lined, 60¢10¢70¢  
 Red Cedar, 40¢5¢10¢10¢5¢  
 Petroleum, 70¢10¢10¢75¢  
 B. & L. B. Co., 60¢10¢  
 Metal Key, 60¢10¢  
 Star, 50¢10¢  
 West Lock, 50¢10¢  
 John Sommer's Peerless Tin Key, 40¢  
 John Sommer's Boss Tin Key, 50¢  
 John Sommer's Victor Mtl. Key, 50¢  
 John Sommer's Duplex Metal Key, 60¢  
 John Sommer's Diamond Lock, 40¢  
 John Sommer's L.X.L. Cork Lined, 50¢  
 John Sommer's Reliable Cork Lined, 50¢10¢  
 John Sommer's Chicago Cork Lined, 60¢  
 John Sommer's O. K. Cork Lined, 50¢  
 John Sommer's No Brand, Cedar, 50¢  
 John Sommer's Perfection, Cedar, 40¢  
 Self Measuring

Enterprise, Self Measuring and Pump, 1/2 doz., \$36.00, 40¢10¢  
 Lane's, 1/2 doz., \$36.00, 40¢10¢  
 National Measuring, 1/2 doz., \$36.00, 40¢10¢

**Felloe Plates—**  
 See Plates, Felloe.

**Files— Domestic—**  
 List Nov. 1, 1899.  
 Best Brands, 70¢10¢75¢10¢  
 Standard Brands, 75¢10¢10¢  
 Lower Grade, 75¢10¢10¢80¢10¢  
 Gold Medal, 70¢  
 McCaffrey's American Standard, 60¢10¢10¢

**Imported—**  
 Stubs' Tapers, Stubs' list, July 24, '97, 33¢1/2 40¢

**Fixtures, Fire Door—**  
 Richards Mfg. Co.,  
 Universal, No. 103; Special, No. 104, \$3.75  
 Fusible Links, No. 36, 50¢  
 Expansion Bolts, No. 107, 60¢10¢

**Grindstone—**  
 Net Prices:  
 Inch, 15 17 19 21  
 Per doz., \$3.60 3.85 4.15 4.65  
 Peck, Stow & Wilcox Co.,  
 In, 15 17 19 21 24  
 \$1.00 4.40 4.75 5.50 6.50, 30¢  
 Reading Hardware Co., 60¢

**Fodder Squeezers—**  
 See Compressors.

**Forks—**  
 American Fork & Hoe Co.,  
 Iowa Dig-Ezy Potato, 70¢5¢  
 Hay, Regular, 3-time, 45¢20¢12¢  
 Hay, Regular, 4-time, 60¢7¢5¢  
 Champion, Hay, 60¢12¢  
 Acme, Hay, 60¢20¢  
 Manure, Regular, 4-time, 65¢5¢  
 Manure, Regular, 5 and 6 time, 70¢  
 Champion, Manure, 70¢  
 Columbia, Manure, 70¢  
 Acme, 4-time, 60¢10¢5¢  
 Round Shoulder Header, 4-time, 65¢  
 Champion, Header, 4-time, 65¢  
 Dakota, Header, 4-time, 65¢  
 Kansas Header, 65¢  
 Wood, Barley, 35¢5¢  
 Steel, Barley, 65¢  
 Columbia, Spading, 70¢7¢5¢

**Frames— Wood Saw—**  
 White, 8'x1' Bar, per doz. 75¢80¢  
 Red, 8'x1' Bar, per doz. \$1.00 1.25  
 Red, Dbl. Brace, per doz. \$1.10 1.50

**Freezers, Ice Cream—**  
 Qt., 1 2 3 4 6  
 Each, \$1.25 \$1.60 \$1.90 \$2.20 \$2.80

**Fruit and Jelly Presses—**  
 See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.**

**Fuse— Per 1000 Feet.**  
 Hemp, 25¢  
 Cotton, 3.20  
 Waterproof Sgt. Taped, 3.65  
 Waterproof Dbl. Taped, 4.40  
 Waterproof Tpl. Taped, 5.15

**Gates, Molasses and Oil—**  
 Stebbins' Pattern, 80¢10¢5¢

**Gauges—**  
 Marking, Mortise, &c., 50¢50¢10¢  
 Chapin-Stephens Co.,  
 Marking, Mortise, &c., 50¢50¢10¢  
 Diston's Marking Mortise, &c., 67¢  
 Wire, Brown & Sharpe's, 33¢4¢  
 Wire, Morse's, 25¢  
 Wire, P. S. & W. Co., 33¢4¢

**Gimlets— Single Cut—**  
 Numbered assortment, per gro.  
 Nail, Metal, No. 1, \$2.00; 2, \$2.30  
 Spike, Metal, No. 1, \$1.00; 2, \$1.30  
 Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60  
 Spike, Wood Handled, No. 1, \$1.30; 2, \$1.60

**Glass, American Window**  
 See Trade Report.

**Glasses, Level—**  
 Chapin-Stephens Co., 65¢65¢10¢

**Glue, Liquid Fish—**  
 Bottles or Cans, with Brush, 25¢10¢50¢  
 Elwell's, 50¢

**Groase, Axle—**  
 Common Grade, gro. \$6.00 6.50  
 Dwyer's Everlasting, 19-lb. pairs, ea. 85¢; in boxes, 1 doz., 1 lb., \$1.20  
 2 lb., \$2.00  
 Helmet Hard Oil, 25¢

**Griddles, Soapstone—**  
 Pike Mfg. Co., 30¢30¢10¢

**Grinders—**  
 Pike Mfg. Co.,  
 Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral foot power, 33¢5¢  
 Mower Knife and Tool, \$5.00, 40¢10¢  
 Royal Mfg. Co.,  
 Aluminum Grinding Machines, each, Nos. 01, \$1.75; 1A, \$2.50; 10, \$5.00  
 Aluminum Sickle Grinders, each, Nos. 20, \$5.00; 20A, \$5.00; 20A Combined, \$6.50  
 Aluminum Disc Grinders, each, \$2.50

**Grindstones—**  
 Pike Mfg. Co.,  
 Improved Family Grindstones, 1/2 inch, 1/2 doz., \$2.00, 33¢5¢  
 Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted, 40¢

**Grips, Nipple—**  
 Perfect Nipple Grips, 40¢10¢2¢

**Halters and Ties—**  
 Con. Ties, 70¢  
 Bridgeport Chain Co.,  
 Triumph Coil and Halters, 35¢2¢40¢  
 Brown Coil and Halters, 35¢50¢5¢  
 Brown Cow Ties, 50¢50¢10¢5¢  
 Brown Tie Outs, 70¢10¢75¢5¢  
 Covert Mfg. Co.,  
 Web, 30¢2¢  
 Jute Rope, 35¢  
 Sisal Rope, 20¢2¢  
 Cotton Rope, 45¢  
 Hemp Rope, 45¢  
 Oneida Community,  
 Am. Coil and Halters, 40¢40¢5¢  
 Am. Cow Ties, 45¢50¢  
 Niagara Coil and Halters, 45¢50¢5¢  
 Niagara Cow Ties, 45¢50¢10¢5¢

**Hammers—**  
 Handled Hammers—  
 Heller's Machinists', 55¢100¢55¢10¢5¢  
 Heller's Farriers', 40¢50¢40¢10¢5¢  
 Peck, Stow & Wilcox Co.,  
 Crucible Steel, 40¢100¢50¢  
 Farriers', 40¢100¢50¢  
 Riveting, 40¢100¢50¢  
 Machinists', 60¢50¢  
 Blacksmiths', 50¢  
 Elmore Shoemakers' Hammers, 75¢  
 Fayette R. Plumb,  
 A. E. Nail, 40¢2¢40¢12¢  
 Eng. and B. S. Hand, 50¢10¢50¢60¢  
 Machinists' Hammers, 60¢10¢5¢  
 Rivet and Tinner's, 40¢7¢60¢12¢5¢  
 Victor Magnetic Tack, 1/2 gro., \$7.75

**Heavy Hammers and Sledges—**  
 Under 3 lb., per lb., 50¢, 80¢10¢  
 3 to 5 lb., per lb., 40¢, 80¢10¢10¢  
 Over 5 lb., per lb., 30¢, 80¢10¢10¢  
 Over 5 lb., per lb., 30¢, 80¢10¢10¢

**Handles—**  
 Agricultural Tool Handles  
 Are, Pick, &c., 60¢10¢10¢60¢10¢5¢  
 Hoe, Rake, &c., 40¢  
 Fork, Shovel, Spade, &c.,  
 Long Handles, 40¢  
 D Handles, 40¢  
 Cross-Cut Saw Handles—  
 Atkins, 50¢  
 Champion, 50¢  
 Disston's, 50¢  
 Mechanics' Tool Handles—  
 Auger, assorted, gro. \$1.00 1.50  
 Brad Axl., 1.65 1.75  
 Chisel Handles, Ass'd, per gro.:  
 Tanged Firmer, Apple, \$2.40 2.00  
 \$2.65; Hickory, \$2.15 2.00  
 Socket Firming, Apple, \$1.75 1.50  
 \$1.95; Hickory, 1.60 1.75  
 Socket Framing, Hickory, \$1.60 1.75

File, assorted, gro. \$1.30 1.10  
 Hammer, Hatchet, &c., 60¢10¢60¢10¢5¢  
 Hand Saw, Varnished, doz., 80¢  
 85¢; Not Varnished, 65¢75¢  
 Plane Handles:  
 Jack, doz., 30¢; Fore, doz., 45¢  
 Chapin-Stephens Co.,  
 Carving Tool, 30¢30¢10¢  
 Chisel, 60¢60¢10¢  
 File and Axl., 30¢30¢10¢  
 Saw and Plane, 30¢30¢10¢  
 Screw Driver, 30¢30¢10¢  
 Millers Falls Adj. and Ratchet Auger Handles, 15¢10¢  
 Nicholson Simplicity File Handle, 1/2 gro. \$0.85 1.50

**J. L. Osgood:**  
 Indestructible File and Tool, 1/2 gro., No. 1, \$8.00; No. 2, \$8.50; No. 3, \$9.00; No. 4, \$9.50; No. 5, \$10.00, gro. lots 10¢

W. A. Zelnicker Supply Co.,  
 Hammer, 1/2 doz., 12 in., \$2.00; 14 in., \$2.00; 16 in., \$2.30; 18 in., \$2.50; 20 in., \$2.70; 22 in., \$3.00; 24 in., \$3.30; 26 in., \$3.50; 30 in., \$3.80  
 Sledge, 1/2 doz., oval, 30 in., \$3.80; octagon, 30 in., \$3.80; oval, 36 in., \$4.00; octagon, 36 in., \$4.00  
 Axe, 1/2 doz., 23 to 31 in., \$5.60; 36 in., \$5.80  
 Adze, 1/2 doz., 36 in., \$5.30; 36 in., \$7.80  
 Pick, 1/2 doz., R. R., 36 in., \$5.00; coal, 31 in., \$5.80  
 Hatchet, 1/2 doz., 12 to 14 in., \$2.00

**Hangers—**  
 NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.  
 Chicago Spring Butt Co.,  
 Friction, 25¢  
 Oscillating, 25¢  
 Big Twin, 25¢  
 Chisholm & Moore Mfg. Co.,  
 Baggage Car Door, 50¢  
 Elevator, 30¢  
 Railroad, 50¢  
 Cronk & Carrier Mfg. Co.,  
 Loose Axle, 60¢10¢  
 Roller Bearing, 70¢  
 Griffin Mfg. Co.,  
 Solid Axle, No. 10, \$12.00, 60¢10¢  
 Roller Bearing, No. 11, \$15.00, 60¢10¢  
 Roller Bearing, Ex. Hy., No. 22, \$18.00, 60¢10¢  
 Bull Dog, \$24.00, 70¢  
 Lane Bros. Co.,  
 Parlor, Ball Bearing, \$1.00; Standard, \$1.15; No. 105, \$2.85; New Model, \$2.80; New Champion per set of 4 Hangers, complete with track, \$2.25

Barn Door, Standard, 60¢10¢  
 Hinged, net \$0.88  
 Covered, 60¢5¢  
 Special, 70¢5¢  
 Trolley Hangers and track, 50¢  
 Lawrence Bros.,  
 Cleveland, 70¢7½¢  
 Clipper, No. 75, 60¢  
 Crown, 55¢10¢  
 Cyclone, No. 40, net \$6.50  
 Tandem, No. 50, net \$7.50  
 New York, 55¢10¢  
 Trolley, No. 30, pair, \$1.25  
 McKim Mfg. Co.,  
 Roller Bearing, Nos. 1 and 2, 70¢  
 Anti-Friction, 60¢  
 Hinged Hangers, King Charm, 60¢  
 Richards Mfg. Co.,  
 Hangers, Nos. 47, 48, 147, 247, 60¢5¢  
 Pioneer Wood Track, No. 3, \$2.25  
 Roller B'r'g St'l Track No. 12, \$2.20  
 Roller B'r'g St'l Track No. 13, \$2.50  
 Roller B'r'g, Nos. 39, 41, 43, 70¢7½¢  
 Hero, Adj. Track No. 19, 50¢10¢  
 Adjustable Track Tandem Trolley Track No. 16, 50¢10¢  
 Seal, Steel Track No. 8, \$2.25  
 Auto Adj. Track No. 22, 50¢5¢  
 Trolley B. D. No. 17, \$1.25; F. D. No. 120, \$2.25; No. 121, \$2.45; No. 150, \$2.50  
 Safety Underwriters F. D. No. 101, 50¢  
 Tandem No. 41, 2½ and 3 60¢10¢  
 Palace, Adjustable Track No. 132, 50¢5¢  
 Royal, Adjustable Track No. 122, 50¢10¢  
 Ives' Wood Track No. 1, \$2.25  
 Trolley B. D. No. 20, 50¢10¢  
 Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 28, \$1.60  
 Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2, 70¢7½¢  
 Anti-friction, No. 42; No. 44, Sizes 2½ and 3, 60¢  
 Hinged Tandem No. 48, 60¢5¢  
 Folding Door B. B. Swivel No. 135, 40¢  
 Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, 1/2 doz., 4 in., \$12.00; 5 in., \$14.00, 40¢10¢  
 Myers' Stayon Hangers, 60¢

**Hangers— Garment—**  
 Pullman Trouser, 1/2 gro., No. 1, \$9.00; No. 4, \$24.00; No. 5, \$16.50; No. 8, Black Enamel, \$7.50; No. 10, \$21.00; No. 12, \$8.00; No. 15, Rods, \$9.00; No. 18, Loops, \$10.00  
 Victor Folding, 1/2 gro. \$9.60

**Gate—**  
 Myers' Patent Gate Hangers, 1/2 doz., net 50¢  
 Lane Bros. Co., 35¢

**Hasps—**  
 Griffin's Security Hasp, 50¢10¢  
 McKinney's Perfect Hasp, 1/2 doz., 60¢

**Hatchets—**  
 Regular list, first qual. 40¢12½¢@—  
 Second quality, 50¢10¢5¢@—

**Heaters, Carriage—**  
 Clark, No. 5, \$1.25; No. 5H, \$1.50; No. 3, \$1.75; No. 3D, \$2.00; No. 7D, \$2.25; No. 3E, \$2.50; No. 1, \$3.00, 25¢  
 Clark Coal, 1/2 doz., \$0.75, 20¢

**Hinges—**  
 Blind and Shutter Hinges  
 Surface Gravity Locking Blind:  
 Doz. Sets with Fastenings, No. 1, \$0.70; No. 3, \$1.25; No. 5, \$2.65  
 Mortise Shutter, 80¢  
 Mortise Reversible Shutter, 80¢  
 North's Automatic Blind Fixtures, No. 2, for Wood, \$3.00; No. 3, for Brick, \$11.50  
 Charles Parker Co., 70¢75¢  
 Parker Wire Goods Co.,  
 Hale & Benjamin Automatic Blind Hinges, 20¢  
 Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00, 20¢

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 Myers' Patent Gate Hangers, 1/2 doz., net 50¢  
 Lane Bros. Co., 35¢

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 Griffin's Security Hasp, 50¢10¢  
 McKinney's Perfect Hasp, 1/2 doz., 60¢

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 Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00, 20¢

**Gate—**  
 Myers' Patent Gate Hangers, 1/2 doz., net 50¢  
 Lane Bros. Co., 35¢

Reading's Gravity, 60¢  
 Stanley's Steel Gravity Blind Hinges, No. 167½, 1/2 doz. sets, without screws, \$0.95, with screws, \$1.25  
 Wrightsville Hardware Co.,  
 O. S. Lull & Porter, 75¢5¢  
 Acme, Lull & Porter, 75¢  
 Queen City Reversible, 75¢  
 Shepard's Noiseless, Nos. 60, 65, 75, 75¢5¢  
 Niagara, Gravity Locking, Nos. 1, 3 & 5, 75¢10¢  
 Clark's O. P., No. 1, 75¢10¢  
 Clark's O. P., Nos. 3 and 5, 75¢10¢  
 Tip Pat'n, No. 1, 75¢10¢  
 Clark's No. 3, 75¢5¢  
 Buffalo Gravity Locking, Nos. 1, 3 & 5, 70¢10¢5¢  
 Shepard's Double Locking, 75¢  
 Champion Gravity Locking, 75¢5¢  
 Pioneer, 75¢10¢  
 Empire, 65¢  
 W. H. Co.'s Mortise Gravity Locking, No. 2, 60¢10¢

**Gate Hinges—**  
 Clark's or Shepard's—Doz. sets:  
 No. 1, 2, 3  
 Hinges with Latches, 2.70 5.00  
 Hinges only, 1.25 1.90 3.50  
 Latches only, .70 .75 .31

**New England:**  
 With Latch, doz., \$12.00  
 Without Latch, doz., \$11.00  
 Reversible Self-Closing:  
 With Latch, doz., \$11.75  
 Without Latch, doz., \$11.35

**Western:**  
 With Latch, doz., \$11.75  
 Without Latch, doz., \$1.15  
 Wrightsville Hardware Co.,  
 Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3, 70¢

**Miscellaneous—**  
 Griffin Mfg. Co., Fleur de Lis Surface Hinges, 1/2 doz. prs., \$1.00  
**Pivot Hinges—**  
 Bommer Bros. Pivot Ball Bearing, 40¢  
 Lawson Mfg. Co. Matchless, 30¢

**Spring Hinges—**  
 Holdback, Cast Iron, \$0.75 0.87 0.90  
 Non-Holdback, Cast Iron, \$0.50 0.56 0.75  
 J. Bardsley,  
 Bardsley's Non-Checking Mortise Floor Hinges, 40¢  
 Bardsley's Patent Checking, 33¢5¢  
 Bommer Bros.,  
 Spring Butt Hinges, 40¢  
 Surface Floor, Ball Bearing, 40¢  
 Mortise Floor, Ball Bearing, 40¢  
 Lavatory Hinges, 40¢  
 Non-Holdback Screen Door, Nos. 2000 and 900, 40¢  
 Holdback Screen Door, No. 999, 1/2 gro., \$9.00

Chicago Spring Butt Co.,  
 Chicago Spring Hinges, 25¢  
 Triple End Spring Hinges, 50¢  
 Chicago (Ball Bearing) Floor, 50¢  
 Garden City Engine House, 25¢  
 Keene's Saloon Door, 40¢  
 Columbian Hardware Co.,  
 Acme, Wrought Steel, 30¢  
 Acme, Brass, 25¢  
 American, 30¢  
 Columbia, 1/2 gr., No. 14, \$9.00; No. 18, \$25.00  
 Columbia, Adj., No. 7, 1/2 gr. \$12.00  
 Gem, new list, 30¢  
 Clover Leaf and Acorn, 12.00  
 Oxford, new list, 30¢  
 Floor Spring Hinges, 65¢10¢  
 Columbian Steel, 65¢10¢  
 Lawson Mfg. Co.,  
 Matchless Spring Hinges, 30¢  
 Matchless Jamb Hinges, 30¢  
 Richards Mfg. Co.,  
 Superior Double Acting Floor Hinges, 40¢  
 Shelby Spring Hinge Co.,  
 Buckeye All Steel Holdback Screen Door, 1/2 gr. \$9.00  
 Chief Ball Bearings Floor Hinge, 50¢  
 Ball Bearing Door, 25¢  
 No. 77, Sheet Steel Holdbk, 1/2 gr. \$9.00  
 Standard Mfg. Co.,  
 Champion Double Acting Door Hinge, 25¢10¢10¢  
 Standard Double Acting Floor Hinge, 25¢10¢10¢  
 Superior Spring Hinge Co.,  
 Superior Floor Hinges, 33½¢  
 Spring Hinges, 33½¢

**Wrought Iron Hinges—**  
 Strap and T Hinges, &c., list  
 February 10, 1908:  
 Light Strap Hinges, 50¢10¢  
 Heavy Strap Hinges, 60¢5¢  
 Light T Hinges, 50¢  
 Heavy T Hinges, 40¢  
 Extra Hry. T Hinges, 50¢10¢  
 Hinge Hasps, 33½¢  
 Cor. Heavy Strap, 60¢5¢  
 Cor. Ex. Heavy T, 50¢10¢  
 Screw Hook 6 to 12 in., 1b. 31¢  
 and Strap, 14 to 20 in., 1b. 31¢  
 22 to 36 in., 1b. 31¢

**Screw Hook and Eye:**  
 3 to 1 inch, 7b. 61¢  
 5-inch, 7b. 71¢  
 1½-inch, 7b. 81¢

**Hitchers, Stall—**  
 Covert Mfg. Co., Stall Hitchers, 30¢2¢

**Hods— Coal—**  
 M'Far's list, price per gross:  
 Inch, 15 16 17 18  
 Galv. Open, \$35 \$39 \$12 \$16  
 Jap. Open, 26 28 31 35  
 Galv. Funnel, 43 48 52 56  
 Jap. Funnel, 33 36 59 43

**Masons' Etc.**  
 Cleveland Wire Spring Co.,  
 Steel Brick, No. 162, each \$1.60  
 Steel Mortar, No. 158, each \$1.35

Extra 5¢10¢ often given on most of these Hinges.

Extra 10¢ often given on most of these Hinges.

Extra 10¢ often given on most of these Hinges.



**Hoes— Eye —**  
**Scovill and Oval Pattern.**  
 60¢ 10¢ 60¢ 10¢ 10¢  
**Grub, list Feb. 23, 1899,**  
 70¢ 10¢ 70¢ 10¢ 10¢  
 D. & H. Scovill.....27 1/2  
 Am. Fork & Hoe Co. (Scovill Pat-  
 tern).....60&5%

**Handled—**  
 Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50  
 Star Double Bit.....\$2.50  
 American Fork & Hoe Co.:  
 Regular, Cotton.....75&10&5&2 1/2  
 Crescent, Cultivator.....75&2 1/2  
 Mattock, Senior.....70  
 Mattock, Junior.....70  
 Sprouting.....50  
 Tobacco, Harper's.....66&15&10  
 Warren.....55&10&10&5  
 Ivanhoe.....65&15&10  
 Cultivator, B B 6.....70&10&10&5  
 Cultivator, B B 6 1/2.....70&10&10&5  
 Weeding, Acme.....72&10&10  
 Scuffle, Lightning.....60&5

**Hoisting Apparatus—**  
 See **Machines, Hoisting.**

**Holders— Bit—**  
 Angular, 3/4 doz., \$21.00.....45&10%

**Door—**  
 Bardsley's, Iron, 40%; Brass and  
 Bronze.....25  
 Empire.....50  
 Pullman.....50  
 Richards Mfg. Co., No. 117, Ever-  
 ready, 40%; Nos. 118, 119, Sure  
 Grip.....50  
 Superior.....33 1/2

**File and Tool—**  
 Nicholson File Holders and File  
 Handles.....33 1/2&40%

**Fruit Jar—**  
 Triumph Fruit Jar Holder, 3/4 gross,  
 \$18.00; 1/2 doz.....\$2.00

**Trace and Rein—**  
 Fernald Double Trace Holder, 3/4 doz,  
 pairs.....\$1.25  
 Dash Rein Holder, 3/4 doz.....\$1.25

**Hones—Razor—**  
 Pike Mfg. Co., Belgian and Swat-  
 50%; German.....33 1/2

**Hooks—Cast Iron—**  
 Bird Cage, Reading.....40%  
 Clothes Line, Reading List.....40%  
 Coat and Hat, Reading.....45&20  
 Coat and Hat, Wrightsville.....60&5  
 Harness, Reading List.....40%

**Wire—**  
 Belt, Nos. 1 to 15.....75¢ 10¢ 80%  
 Wire C. & H. Hooks.....80¢ 80¢ 10%  
 Bradley Metal Clasp Wire, Coat and  
 Hat.....75¢ 10¢ 80%  
 Columbian Hdw. Co., Gem.....75¢ 10%  
 Parker Wire Goods Co., King.....75¢ 10%  
 Wire Goods Co.:  
 Acme.....60&10%  
 Crown.....75%  
 Brace, 75%; Czar, 65&10%; V  
 Ceiling, 75%  
 Czar Harness, 50%  
 Ceiling, 75%

**Wrought Iron—**  
 Box, 6 in., per doz., \$0.90; 8 in.,  
 \$1.15.  
 Cotton.....doz. \$1.25@1.50  
 Wrought Staples, Hooks, etc.,  
 See Wrought Goods.

**Miscellaneous—**  
 Hooks, Bench, see **Stops, Bench.**  
 Bush, Light, doz., \$6.20; Medium,  
 \$6.75; Heavy, \$7.65  
 Grass, best, all sizes, per doz.,  
 \$2.75@3.00  
 Grass, common grades, all sizes,  
 per doz.....\$1.25@1.50  
 Whiffletree.....10.5% 60¢

**Hooks and Eyes:**  
 Brass.....60¢ 100¢ 10%  
 Malleable Iron.....70¢ 70¢ 10%  
 Covert Mfg. Co. Gate and Scuttle  
 Hooks.....40%  
 Turner & Stanton Co. Cup and  
 Shoulder.....85&10%  
 Bench Hooks—See **Bench Stops.**  
 Corn Hooks—See **Knives, Corn.**

**Horse Nails—**  
 See **Nails, Horse.**

**Horseshoes—**  
 See **Shoes, Horses.**

**Hose, Rubber—**  
 Garden Hose, 3/4-inch:  
 Competition.....ft. 6¢ 6¢ 4¢  
 3-ply Guaranteed.....ft. 8¢ 8¢ 12¢  
 4-ply Guaranteed.....ft. 9¢ 12¢  
 Cotton Garden, 3/4-in., coupled:  
 Low Grade.....ft. 8¢ 9¢  
 Fair Quality.....ft. 10¢ 11¢

**Irons— Sad—**  
 From 1/4 to 1 1/2.....10.2% 2 1/2¢  
 B. B. Sad Irons.....10.3% 3 1/2¢  
 Mrs. Potts', cents per set:  
 Nos. 50 55 60 65  
 Jap'd Caps.....86 93 96 93  
 Tind' Caps.....91 88 1.01 98  
 New England Pressing, lb. 3 1/4¢ 1¢

**Bar and Corner—**  
 Richards Mfg. Co., Bar, 60&10%;  
 Corner.....60%

**Pinking—**  
 Pinking Irons.....doz. 60¢ 65¢

**Irons, Soldering**  
 See **Coppers.**

**Jacks, Wagons—**  
 Covert Mfg. Co.:  
 Auto Screw.....30&2%; Steel, 45%  
 Lockport.....30&5%  
 Lane's Steel.....30&5%  
 Richards' Tiger Steel No. 130.....50&10%  
 Smith & Hemenway Co.'s.....25%

**Ladder—**  
 Richards Mfg. Co., Ladder Jacks.....50%

**Jointers—**  
 Pike Mfg. Co., Saw Jointers, \$7.00.....40%

**Kettles—**  
 Brass, Spun, Plain.....20¢ 12 1/2  
 Enamelled and Cast Iron—See **Ware,**  
 Hollow.

**Knives—**  
 Butcher, Kitchen, &c.—  
 Foster Bros.' Butcher, &c.....30%  
 Wilkinson Shear & Cutlery Co.....60%

**Corn—**  
 Columbian Cutlery Co., Wilcox  
 Brand Knives and Hooks.....60%  
 American Fork & Hoe Co.:  
 Easy Cut, 3/4 doz., No. 10 C H.....\$2.10  
 Easy Cut, 3/4 doz., No. 10 B C H.....\$2.20  
 Acme, 3/4 doz.....\$2.35  
 Dent, 3/4 doz.....\$2.35  
 Adjustable, Serrated, 3/4 doz.....\$1.90  
 Serrated, 3/4 doz.....\$1.85  
 Yankee, No. 1 C H.....\$1.35  
 Yankee, No. 2 C H.....\$1.15

**Drawing—**  
 Standard List.....80¢ 10¢ 10%  
 C. E. Jennings & Co., Nos. 45, 46,  
 25&7 1/2  
 Jennings & Griffin, Nos. 41, 42,  
 60&7 1/2  
 Swan's.....66&7 1/2  
 Watrous.....16 1/2  
 L. & J. White.....20&25

**Hay and Straw—**  
 Serrated Edge, per doz. \$5.00@5.50  
 Iwan's Sickle Edge.....3/4 doz. \$9.50  
 Iwan's Serrated.....3/4 doz. \$10.00

**Miscellaneous—**  
 Farriers'.....doz. \$2.60@3.55  
 Westenhelm's.....3/4 doz. \$3.00@3.25

**Knobs—**  
 Base, 2 1/2-inch, Birch or Maple,  
 Rubber Tip.....gro. \$1.25@1.40  
 Carriage, Jap., Drive, all sizes,  
 gro. 35¢ 40¢  
 Door, Mineral.....doz. 65¢ 70¢  
 Door, Por. Jap'd.....doz. 70¢ 75¢  
 Door, Por. Nickel.....doz. \$2.05@2.15  
 Bardsley's Wood Door, Shutters, &c. 15%

**Lacing, Leather—**  
 See **Belting, Leather.**

**Ladders, Store, &c.—**  
 Lane's Store.....25%  
 Myers' Noiseless Store Ladders.....50%  
 Richards Mfg. Co.:  
 Improved Noiseless, No. 112.....50%  
 Climax Shelf, No. 113.....50%  
 Trolley, No. 109.....50%

**Ladles, Melting—**  
 L. & G. Mfg. Co., Melting and  
 Plumbers'.....25  
 P. S. & W.....40&10  
 Reading.....60%

**Lamps—**  
 Hammer's M. I. Hand.....45%

**Lanterns—Tubular—**  
 Regular, No. 0.....doz. \$4.35@4.50  
 Side Lift, No. 0.....doz. \$4.60@4.75  
 Hinge Globe, No. 0.....doz. \$4.60@4.75  
 Other Styles.....40¢ 40¢ 10%

**Bull's Eye Police—**  
 3-inch.....\$3.75@4.00

**Latches— Thumb—**  
 Roggin's Latches, Jap'd, with  
 Screws.....doz. 35¢ 40¢

**Door—**  
 Cronk & Carrier Mfg. Co., No. 101,  
 125.....doz. \$2.00  
 Richards' Bull Dog, Heavy, 50&35%  
 Richards' Trump, No. 127.....\$1.30

**Leaders, Cattle—**  
 Small.....doz. 50¢; large, 60¢  
 Covert Mfg. Co.:  
 Cotton, 45%; Hemp, 45%; Jute,  
 35%; Sisal, 20%.

**Leathers, Pump—**  
 See **Pumps—**

**Lifters, Transom—**  
 R. & E.....10%

**Lines—**  
 Wire Clothes, Nos. 18 19 20  
 100 feet.....\$2.30 1.95 1.75  
 75 feet.....\$1.95 1.65 1.50  
 Samson Cordage Works:  
 Solid Braided Chalk, Nos. 0 to 3, 40%  
 Solid Braided Masons'.....30%  
 Silver Lake Braided Chalk, No. 0,  
 \$6.00; No. 1, \$6.50; No. 2, \$7.00; No.  
 3, \$7.50.....gr. 20%  
 Masons' Lines, Shade Cord, &c.:  
 White Cotton, No. 3 1/2, \$1.50; No. 4,  
 \$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,  
 \$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;  
 Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;  
 No. 4 1/2, \$4.50.....20%  
 Tent and Awning Lines: No. 5,  
 White Cotton, \$7.50; Drab Cotton,  
 \$8.50.....20%  
 Clothes Lines, White Cotton: 50 ft.,  
 \$2.75; 60 ft., \$3.25; 70 ft., \$3.75;  
 80 ft., \$4.00; 90 ft., \$4.25; 100 ft.,  
 \$4.75.....20%  
 Turner & Stanton Co.:  
 Solid Braided Chalk, Masons' and  
 Awning Lines.....40%  
 Clothes Lines, White Cotton.....20%  
 Shade Cord, Cotton or Linen.....20%

**Locks— Cabinet—**  
 Cabinet Locks.....3 1/4¢ 3 1/4¢ 5%

**Door Locks, Latches, &c.—**  
 NOTE—Net Prices are very often made  
 on these goods.

**Reading Hardware Co.....40%**  
**R. & E. Mfg. Co.....10%**

**Padlocks—**  
 R. & E. Mfg. Co. Wrought Steel and  
 Brass.....75&10%

**Sash, &c.—**  
 Ives' Patent:  
 Crescent.....10%  
 Automatic Gravity Metal Sash, 3/4  
 gro. \$149.58.....10%  
 Window Ventilating.....10%  
 Pullman Patent Ventilating Lock.....25%  
 Reading Sash Locks.....40%  
 Taylor Mfg. Co., Perfect Ventilating,  
 3/4 doz.....\$0.75@1.00

**Machines—Boring—**  
 Com. Up'r't, without Augers.....\$2.00@2.25  
 Com. Ang'l'r, without Augers.....\$2.25@2.50

**Ford Auger Bit Co.....\$2.00**  
**Jennings' Nos. 1 and 4.....25&7 1/2**  
**Millers' Falls, 2 1/2; Angular, \$2.90**  
**Swan's Improved.....10&10%**

**Corking—**  
 Reisinger Invaluable Hand Power.....3/4 doz. \$48.00

**Fence—**  
 Williams' Fence Machines.....each \$5.50

**Hoisting—**  
 Moore's Anti-Friction Chain Hoist.....30%  
 Moore's Hand Hoist, with Lock  
 Brake.....20%  
 Moore's Cyclone High Speed Chain  
 Hoist.....25%

**Ice Cutting—**  
 Chandler's.....12 1/2%

**Washing**  
 Boss Washing Machine Co.: Per doz.  
 Boss No. 1.....\$57.00  
 Boss Rotary.....\$57.00  
 Champion Rotary Banner No. 1.....\$57.00  
 Standard Champion No. 1.....\$50.00  
 Standard Perfection.....\$27.00  
 Cincinnati Square Western.....\$33.00  
 Cineeda American, Round.....\$33.60

**Mallets—**  
 Hickory.....45¢ 45¢ 50%  
 Lignumvite.....45¢ 45¢ 50%  
 Timmers' Hickory and Apple-  
 wood.....doz. 45¢ 45¢ 50%

**Mangers, Stable—**  
 Swett Iron Works.....50%

**Mats, Door—**  
 Acme Flexible Steel.....50%  
 Elastic Steel (W. G. Co.), new list.....50%

**Mattocks—**  
 See **Picks and Mattocks.**

**Milk Cans—See Cans, Milk.**

**Mills, Coffee, &c.—**  
 Enterprise Mfg. Co.:  
 Coffee.....20&25  
 Shell and Corn.....25&10  
 National list Jan. 1, 1902.....30  
 Parker's Columbia and Victoria.....30%  
 Parker's Box and Side.....50&10  
 Swift, Lane Bros. Co.....30%

**Motors, Water—**  
 Divine's Red Devil.....30%  
 \$2.50 3.50 10.00 15.00.....33 1/2  
 No. 1 2 3 4  
 Lippincott's:  
 No.....\$2.50 3.50 10.00 15.00.....33 1/2  
 Pike Mfg. Co., Tool and Knife  
 Grinding.....33 1/2

**Mowers, Lawn—**  
 NOTE—Net prices are generally quoted  
 Cheapest, 10-in., \$2.00; advance  
 10¢ for each size.  
 Cheap, 10-in., \$2.25; advance 15¢  
 20¢ for each size.  
 Better Grade, 10-in., \$3.00; ad-  
 vance 25¢ for each size.  
 12 14 16 18 in  
 High Grade.....\$4.50 4.75 5.00 5.25  
 Continental.....60  
 Great American.....70  
 Great American Ball Br'g, new list.....70  
 Quaker City.....70  
 Pennsylvania.....60  
 Pennsylvania, Jr., Ball Bearing  
 Pennsylvania.....50&10 1/2  
 Pennsylvania Golf.....50  
 Pennsylvania Horse.....33&5  
 Pennsylvania Pony.....40&5

**Nails—**  
 Wire Nails and Brads, Miscel-  
 laneous.....85¢ 85¢ 10%  
 Cut and Wire, See **Trade Report.**  
 Hungarian, Finishing, Upholster-  
 ers', &c. See **Tacks.**

**Horse—**  
 Nos. 6 7 8 9 10  
 Anchor.....23 21 20 19 18 .. 3/4 lb.  
 Coleman.....13 12 12 11 11 .. net, 12¢  
 New Haven.....23 21 20 19 18 .. 3/4 lb.  
 Livingstone.....19 18 17 16 16 .. net, 12¢  
 Western.....3/4 lb. 6¢ 4¢  
 Jobbers' Special Brands.....per lb. 9¢

**Picture—**  
 1 1/4 2 2 1/2 3 in.  
 Brass Hd. gro. 45 55 60 70  
 Por. Head, gro. 1.10 1.10 1.10 1.10

**Upholsters—**  
 Brass.....30%  
 Plated.....30&10%

**Nippers—**  
 See **Pliers and Nippers.**

**Nipples—**  
 Standard Nipple Co.:  
 Wrought Pipe Nipples.....80%

**Nuts— Blank or Tapped.**  
 Cold Punched: Off list.  
 Square.....5.30@5.40¢  
 Hexagon.....5.90@6.00¢  
 Square, O. T. & R.....5.70@5.80¢  
 Hexagon, O. T. & R.....6.50@6.60¢

**Hot Pressed: Off list.**  
 Square.....5.80¢  
 Hexagon.....6.30¢

**Oakum—**  
 Best.....lb. 6 1/2¢  
 U. S. Navy.....lb. 6 ¢  
 Navy.....lb. 5 ¢  
 Plumbers' Spun Oakum.....2 1/4¢ 3 ¢

**Oil—**  
 Pike Mfg. Co., Stonoil.....40%

**Oil Tanks—See Tanks, Oil.**

**Oilers—**  
 Steel, Copper Plated.....75¢ 10%  
 Chase or Paragon:  
 Brass and Copper.....50¢ 10%  
 Zinc.....65¢ 10¢ 70%  
 Railroad.....60¢ 10¢ 10%  
 Malleable, Hammers' Improved, Nos.  
 11, 12 and 13, 10%; Old Pattern,  
 Nos. 1, 2, 3, 4, 50%  
 American Tube & Stamping Co.:  
 Spring Bottom Cans.....70¢ 70¢ 10%  
 Railroad Oilers, &c.....60¢ 60¢ 10%  
 Maple City Mfg. Co.:  
 Spring Bottom Cans.....70¢ 70¢ 10%  
 Railroad Oilers, &c.....60¢ 60¢ 10%

**Openers—Packing Box—**  
 Hereulever, 3/4 doz., \$24.....30%

**Can Openers—**  
 Per doz.  
 Sprague, Iron Handle.....30¢ 45¢  
 Sprague, Wood Handle.....40¢  
 Sardine Scissors.....\$1.75@3.00

**Can and Bottle Openers, 3/4 doz.,**  
 net: Yankee, \$0.75@0.85; Little  
 Gem, \$0.50@0.65; Nifty.....\$0.75

**Egg—**  
 Hartigan Nickel Plate, 3/4 doz., \$2.00;  
 Silver Plate, \$4.00.

**Packing—**  
 Asbestos Packing, Wick and  
 Rope, any quantity.....18¢ 20¢

**Rubber—**  
 (Fair quality goods.)  
 Sheet, C. I.....11¢ 12¢  
 Sheet, C. O. S.....11¢ 12¢  
 Sheet, C. B. S.....12¢ 13¢  
 Sheet, Pure Gum.....40¢ 45¢  
 Sheet, Red.....40¢ 50%  
 Jenkins' '96, 3/4 lb. 80¢.....25%

**Miscellaneous—**  
 American Packing.....lb. 7¢ 10 ¢  
 Cotton Packing.....lb. 16¢ 25 ¢  
 Italian Packing.....lb. 9¢ 10¢  
 Jute.....lb. 4¢ 1/4¢  
 Russia Packing.....lb. 9¢ 10¢

**Pails, Water, Well, &c.—**  
 See **Buckets.**

**Paint—**  
 Dixon's Silica-Graphite, in 1 gal.  
 pails and 5 gal. kegs, 25%; pack-  
 ages of larger size.....20%

**Pans— Dripping—**  
 Standard List.....75%  
 Edwards, Royal Blue.....75%

**Fry—**  
 Common Lipped:  
 Nos.....1 2 3 4 5  
 Per doz.....\$0.75 0.85 0.95 1.15 1.30

**Refrigerator, Galva.—**  
 Inch.....12 14 16 18  
 Per doz.....\$1.75 2.25 2.80 3.15

**Paper—Building Paper**  
 Asbestos.....lb.  
 Roll Board or Building Felt,  
 6 to 30 lb., per 100 sq. ft., 2 1/2¢  
 Roll Board or Building Felt,  
 3-32 and 1/4 in., 45 to 60 lb.,  
 per 100 sq. ft.....3 1/2¢  
 Mill Board, Sheet, 40 x 40 in.,  
 1-32 to 1/2 in.....3¢  
 Per roll.  
 Rosin Sized Sheathing: 500 sq. ft.  
 Light weight, 25 lbs. to roll,  
 48¢ 58¢  
 Medium weight, 30 lbs. to roll,  
 56¢ 70¢  
 Heavy weight, 40 lbs. to roll,  
 75¢ 78¢

**Black Water Proof Sheathing,**  
 500 sq. ft., 1 ply, 65¢; 2 ply,  
 85¢; 3 ply, \$1.10; 4 ply, \$1.25.  
 Deafening Felt, 9, 6 and 4 1/2 sq.  
 ft. to lb., ton.....\$5.50  
 Red Rope Roofing, 250 sq. ft.  
 per roll.....\$1.75

**Tarred Paper—**  
 1 ply (roll 400 sq. ft.), ton,  
 \$3.00@3.30  
 2 ply, roll 108 sq. ft.....65¢  
 3 ply, roll 108 sq. ft.....88¢  
 Slater's Felt (roll 500 sq. ft.).....80¢

**Sand Paper and Cloth—**  
 Flint and Emery.....50¢ 10%  
 Garnet Paper and Cloth.....25%

**Parers—Apple—**  
 Goodell Co.:  
 Family Bay State.....30 doz. \$15.00  
 Improved Bay State.....30 doz. \$30.00  
 New Lightning.....30 doz. \$7.00  
 Turn Table '98.....30 doz. \$6.00  
 White Mountain.....30 doz. \$5.00  
 Ronanza Improved.....each \$7.50  
 Dandy.....each \$10.00  
 Eureka Improved.....each \$20.00  
 New Century.....each \$20.00  
 Ranger.....each \$30.00

Livingston Nail Co.:	
Daisy	doz. \$4.00
Little Star	doz. \$5.00
Rocking Table	doz. \$6.20
Reading Hardware Co.:	
Advance	doz. \$4.00
Baldwin	doz. \$4.00
Reading	doz. \$3.25
Reading	doz. \$6.25

Orange—	
Goodell Co., Success	each \$20.00
Potato—	
Saratoga	doz. \$7.00
White Mountain	doz. \$6.00

### Picks and Mattocks—

(List Jan., 1908.)	
List	75¢@10%
Cronk's Handled Garden Mattock	
doz., \$3.00	33½%

### Pinking Irons—

See Irons, Pinking.

### Pins, Escutcheon—

Brass	50¢@50¢@10%
Iron, list Nov. 11, '85	60¢@60¢@10%

### Pipe, Cast Iron Soil—

Eastern Prices:

Standard, 2-6 in.	68½%
Extra Heavy, 2-6 in.	74½%

### Fittings, Standard and Heavy

Heavy	81½%
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### Pipe, Merchant—

Carloads to Consumers:

Steel	
Blk. Galv. Blk. Galv.	

1/2 and 1/4 in.	66	50	64	72
3/4 in.	68	54	66	52
1 in.	70	58	68	54
1 1/2 in.	74	64	72	62
2 in.	71	56	69	54

### Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:	
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First-class

Second-class

### Pipe, Stove—

Edwards' Nested:	Per 100 joints.
C. L. C. L.	

5 in., Standard Blue	\$6.25	\$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
8 in., Standard Blue	8.00	9.00
9 in., Standard Blue	8.50	9.50
10 in., Standard Blue	8.50	9.50

### Planes and Plane Irons—

#### Wood Planes—

Bench, first qual.	30¢@30¢@10%
Bench, second qual.	40¢@40¢@10%
Molding	25¢@25¢@10%
Chapin-Stephens Co.	

Bench, First Quality	30%
Bench, Second Quality	40%
Molding and Miscellaneous	25%
Toy and German	30%
Union	60%

#### Iron Planes—

Chapin's Iron Planes	60%
Union	60%

#### Plane Irons—

Wood Bench Plane Irons, list Dec. 12, '06	25%
Ruck Bros.	30%
Chapin-Stephens Co.	25%
Union	50%
L. & J. J. White	20¢@25%

### Planters, Corn, Hand—

Kohler's Eclipse	doz. \$7.50
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### Plates—

Felco	doz. 3¼@4¼
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### Steel Pipe Hook—

Never-Break	75¢@10%
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### Pliers and Nippers—

Button Pliers	75¢@75¢@10%
Gas Burners, per doz., 5 in.	\$1.25
Gas pipe, 7	\$2.00
Gas pipe, 8	\$2.25
Gas pipe, 10	\$2.75
Gas pipe, 12	\$3.50

### Acme Nippers—

Cronk & Carrier Mfg. Co.	50¢@5%
American Button	80%
Improved Button	75¢@10%
Cronk's	60%
No. 80 Linemen's	50%
Stub's Pattern	45%
Combination and others	33½%

### Elmore Tool Mfg. Co.

Gas Pliers	70%
Wire and Cutting Pliers	75%

### Heller's Farriers' Nippers, Pincers and Tools—

P. S. & W. Tinner's Cutting Nippers	40%
Swedish Side, End and Diagonal	40%
Cutting Pliers	50%

### Utica Drop Forge & Tool Co.

Pliers and Nippers, all kinds	40%
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### Plumbs and Levels—

Chapin-Stephens Co.	30¢@30¢@10%
Plumbs and Levels	30¢@30¢@10%
Chapin's Imp. Brass Cor.	40¢@40¢@10%
Pocket Levels	30¢@30¢@10%
Extension Sigsbee	30¢@30¢@10%
Machinists' Levels	40¢@40¢@10%
Diston's Plum. and Levels	60¢@10%
Diston's Pocket Levels	60¢@10%
Stanley's Dulux	35%
Woods' Extension	33½%

### Points, Glaziers—

Bulk and 1-lb. papers	7b. 2¢
1-lb. papers	7b. 1¢
1/4-lb. papers	7b. 10¢

### Police Goods—

#### Manufacturers' Lists—25¢@25¢@5%

#### Tower's

#### Polish—Metal, Etc—

Ladd Co.	
Putzade Liquid, 1/2 gal.	1/2 pts.
12.00; 1 pts., \$20.00; 1 qts., \$40.00;	
doz. 1/2 gals., \$6.35; 1 gals., \$12.00.	
Prestoline Liquid, No. 1 (1/2 pt.), 1/2	
doz., \$3.00; No. 2 (1 qt.), \$9.00. 40%	
Prestoline Paste	40%

#### George William Hoffman:

U. S. Metal Polish Paste, 3 oz.	
boxes, 1/2 doz. 50¢; 1/2 doz. \$1.50;	
1/2 lb boxes, 1/2 doz. \$1.25; 1 lb	
boxes, 1/2 doz. \$2.25.	
U. S. Liquid, 8 oz. cans, 1/2 doz.,	
\$1.25.	

#### Barkeepers' Friend Metal Polish, 1/2

doz., \$1.75.	
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#### Stove—

Black Eagle Benzine Paste, 5 lb cans,	
1 lb 10¢	

Black Eagle, Liquid, 1/2 pt. cans.	
doz. 75¢	

Black Jack Paste, 1/2 lb cans, 1/2 doz.	\$3.00
Black Kid Paste, 5 lb cans, each.	\$0.65

Ladd's Black Beauty Liquid, per	
100 tins.	\$6.75

Joseph Dixon, 1/2 gr. \$5.75.	
Dixon's Plumbago	10%

Fireside	1/2 gr. \$2.50
Gem, 1/2 gr. \$1.50.	
Japanese	1/2 gr. \$3.50
Jet Black	1/2 gr. \$3.50
Peerless Iron Enamel, 19 oz. cans.	
doz., \$1.50	

#### Window Polish—

Benj. P. Forbes:	
Glasbright, No. 2, gal pails, 1/2 doz.,	
\$24.00; each, \$2.50; 1 lb cans,	
each	75¢
Glasbright Powder, bbls., 1/2 lb.	20¢

#### Poppers, Corn—

1 qt. Square, doz. \$0.80; gro. \$8.75	
1 qt. Round, doz. \$0.90; gro. \$10.00	
1 1/2 qt. Square, doz. \$1.20; gro. \$12.00	
2 qt. Square, doz. \$1.50; gro. \$15.00	

#### Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, &c.

#### Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢;	
6 1/2 ft., 48¢; 7 ft., 50¢.	
Steel Hitching Posts, each	\$1.30

#### Potato Parers—

See Parers, Potato.

#### Pots, Glue—

Enameled	40%
Tinned	30¢@10%

#### Powder—

Black Sporting:	
Kegs (25 lb.)	\$5.00@5.50
Half Kegs (12 1/2 lb.)	\$2.75@3.00
Quarter Kegs (6 1/4 lb.)	\$1.50@1.65
Canisters, pounds	.25
Canisters, 1/2 pounds	.15
Canisters, 1/4 pounds	.12

#### NOTE.—Prices vary according to territory.

#### King's Semi-Smokeless:

Keg (25 lb bulk)	\$6.50
Half Keg (12 1/2 lb bulk)	\$3.50
Quarter Keg (6 1/4 lb bulk)	\$1.90
Case 24 (1 lb cans bulk)	\$8.50
Half case (1 lb cans bulk)	\$4.50
King's Smokeless: Shot Gun Rifle,	
Keg (25 lb bulk)	\$12.00 \$15.00
Half Keg (12 1/2 lb bulk)	6.25 7.75
Quarter Keg (6 1/4 lb bulk)	3.25 4.00
Case 24 (1 lb cans bulk)	14.00 17.00
Half case 12 (1 lb c. bk.)	7.25 8.75

#### Presses—

#### Fruit, Wine and Jelly—

Enterprise Mfg. Co.	20¢@25%
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#### Seal Presses—

Morrill's No. 1, 1/2 doz., \$20.00.	50%
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#### Pruning Hooks and Shears

See Shears.

#### Pullers, Nail, Etc.—

Cyclops	50%
Elmore Tool Mfg. Co.	
Drop Forged Tack Pullers	10%
Nail Pullers	40%
Miller's Falls, No. 3, 1/2 doz.	\$12.00
Morrill's No. 1, Nail Puller, 1/2 doz.	\$33½@10%
Pearson No. 1, Cyclone Spike Puller,	
each \$30.00	50%
The Scranton Co. Case Lots:	
No. 2B (large)	\$5.50
No. 3B (small)	\$5.00
Smith & Hemenway Co.	
Diamond B.	70%
Giant	50%
Staple Pullers, Utica and Davi-	
son	60%
Taylor Mfg. Co., Sampson Tack,	
1/2 doz.	\$0.40

#### Pulleys, Single Wheel—

Inch	1 1/2	1 3/4	2	3
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Acwing or Tackle,	
doz., 4 in.	\$0.30 .15 .60 1.05

#### Hay Fork, Squirrel or Solid Eye.

Inch	2	2 1/2	3
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Hot House, doz.	\$0.65 .85 1.20
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Inch	1 1/4	1 1/2	2
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Screw, doz.	\$0.16 .19 .23 .30
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Inch	1 1/4	2	2 1/2
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Slide, doz.	\$0.25 .40 .55 .60
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Inch	1 1/2	1 3/4	2	2 1/2
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#### Sash Pulleys—

Common Frame; Square or Round End, per doz., 1 1/4 and 2 in.

per doz., 1 1/4 and 2 in.	\$20@21¢
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#### Acme, No. 35, 1 1/2 in., 19¢; 2 in., 20 1/2¢

#### American Pulley Co.:

Wrought Steel American Plain	
Axle	50¢@10%

Wrought Steel, Eagle, 1/2 doz.	
1 1/2 in., 17¢; 2 in., 20¢; 2 1/2	
in.	27¢

Top Notch, Electrically Welded,	
Nos. 3 and 4, 1/2 doz.	19¢

Common Sense	1/2 doz. 20¢
Merit	1/2 doz. 24 in.
Fox-All-Steel, Nos. 3 and 7, 2 in.	
doz. 50%	

Grand Rapids All Steel Noiseless	
Niagara, No. 25, 1 1/2 in., 19¢	2

No. 26 Tros., 1 1/2 in., 14 1/2¢; 2 in., 16 1/2¢	
Star, No. 26, 1 1/2 in., 19¢; 2 in., 20 1/2¢	

#### Tackle Blocks—See Blocks.

#### Pumps—

Clatern	60%
Pitcher Spout	75¢@10¢@50¢

Wood Pumps, Tubing, &c.	50%
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Barnes Dbl. Acting (low list)	50%
Barnes Pitcher Spout	80%

Contractors' Rubber Diaphragm, No.	
2 B & L, Block Co.	\$16.00

Daisy Spray Pump	1/2 doz. \$6.50
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Flint & Walling's Fast Mail Hand	
(low list)	50¢@5%

Flint & Walling's Fast Mail (low	
list)	50¢@5%

Flint & Walling's Tight Top	
Pitcher	80%

National Specialty Mfg. Co., Measur-	
ing, Nos. 2, \$6.00; 3, \$5.50.	50%

Myers' Pumps (low list)	50%
Myers' Power Pumps	2%
Myers' Spray Pumps	25%

#### Pump Leathers—

Plunger and Valve Leathers—Per

gro.:	
No.	1 2 3 4

Cup Leathers—Per 100:	
Inch.	2 1/2 3 3 1/2 4
	\$5.00 7.00 9.00 12.00

#### Punches—

Saddlers' or Drive, good,

doz. 50¢@75¢	
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Spring, single tube, good qual-

ity	\$1.75
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Revolving (4 tubes)	doz. \$3.50
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Remis & Call Co.'s Cast St'l Drive	50%
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Elmore Tool Mfg. Co.	
Machinists' Center	40%

Timmers: Solid, 50%; Prick	50%
Morrill's Nos. 1AA, 1A, 1B, 1C	
ID, \$15.00	50%

Hercules 1 die, each	\$5.00
Niagara Hollow Punches	50%



**Sausage Stuffers or Fillers**See *Stuffers or Fillers, Sausage.***Saw Frames—**See *Frames, Saw.***Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

Atkins':  
Circular ..... 45%  
Band ..... 50@50 1/2  
Turning Saws ..... 50  
Cross Cut ..... 40  
One-Man Cross Cut ..... 40  
Narrow Cross Cut ..... 50  
Hand, Rip and Panel ..... 35 1/2  
Miter Box and Compass ..... 40  
Muley, Mill and Drag ..... 45  
Wood Saws ..... 40 1/2

Chapin-Stephens Co.:  
Turning Saws and Frames 30@30 1/2  
Diamond Saw & Stamping Works:  
Sterling Kitchen Saws ..... 30 1/2@10 1/2

Disston's:  
Circular, Solid and Ins'ted Tooth 50%  
Band, 2 to 18 in. wide ..... 60  
Band, 1/4 to 1 1/2 ..... 60  
Crosscuts ..... 45  
Narrow Crosscuts ..... 50  
Muley, Mill and Drag ..... 45  
Framed Woodsaws ..... 25  
Woodsaw Blades ..... 25  
Woodsaw Rods, Tuned ..... 15  
Hand Saws, Nos. 12, 99, 9, 16, 1100, 1108, 120, 76, 77, 8 ..... 25  
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1, 0, 00, Combination ..... 30  
Compass, Key Hole, &c. ..... 25  
Butcher Saws and Blades ..... 30 1/2

C. E. Jennings & Co.'s:  
Back Saws ..... 16%  
Butcher Saws ..... 25 1/2  
Compass and Key Hole Saws ..... 33 1/2  
Framed Wood Saws ..... 25 1/2  
Hand Saws ..... 25 1/2  
Wood Saw Blades ..... 30 1/2

Millers Falls:  
Butcher Saws ..... 15 1/2  
Star Saw Blades ..... 15 1/2  
Massachusetts Saw Works:  
Victor Kitchen Saws ..... 40 1/2@50 1/2  
Butcher Saws and Blades ..... 35 1/2@40 1/2  
Peace & Richardson's Hand Saws 30%  
Simonds':

Circular Saws ..... 45%  
Crescent Ground Cross Cut Saws 30%  
One-Man Cross Cuts ..... 40 1/2  
Gang Mill, Muley and Drag Saws 45%  
Band Saws ..... 50  
Back Saws ..... 25 1/2  
Butcher Saws ..... 25 1/2  
Hand Saws ..... 25 1/2  
Hand Saws, Bay State Brand ..... 45  
Compass, Key Hole, &c. ..... 25 1/2  
Wood Saws ..... 40 1/2  
Wheeler, Madden & Clemon Mfg. Co.'s Cross Cut Saws ..... 50

**Hack Saw Blades and Frames—**  
Atkins' Hack Saw Blades A A A. 25%  
Disston's:  
Keynote Blades ..... 25  
Keystone Blades ..... 35  
Hack Saw Frames ..... 30  
Simonds, 25%; The Best, 35%  
Culley ..... 35  
C. E. Jennings & Co.'s:  
Hack Saw Frames, Nos. 175, 180, 40 1/2  
Hack Saws, Nos. 175, 180, complete, 40 1/2

Goodell's Hack Saw Blades ..... 40 1/2  
Griffin's Hack Saw Frames 35 1/2@10 1/2  
Griffin's Hack Saw Blades ..... 35 1/2@10 1/2  
Star Hack Saws and Blades ..... 15 1/2  
Sterling Hack Saw Frames 30 1/2@10 1/2  
Sterling Power Hack Saw Machines each, No. 1, \$25.00; No. 2, \$30.00, 10%  
Victor Hack Saw Blades ..... 20  
Victor Hack Saw Frames ..... 40  
Whitaker Mfg. Co.:  
National Hand Blades, Hand Frames, Power Blades ..... 40

**Scroll—**  
Barnes, No. 7, \$15 ..... 25%  
Barnes' Scroll Saw Blades ..... 40%  
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18; with boring attachment, \$20 ..... 20%  
Lester, complete, \$10.00 ..... 15 1/2  
Rogers, complete, \$3.50 and \$4.00 ..... 15 1/2

**Scales—**  
Union Platform, Plain \$2.10 @ 2.20  
Union Platform, Stpd. \$2.20 @ 2.30  
Chaitillon's:  
Eureka ..... 25  
Favorite ..... 40  
Grocers' Trip Scales ..... 50  
The Standard Portables ..... 40  
The Standard R. R. and Warehouse ..... 50 1/2

**Scrapers—**  
Box, 1 Handle ..... doz. \$1.85 @ 2.10  
Box, 2 Handle ..... doz. \$2.35 @ 2.50  
Ship, Light, \$2.00; Heavy, \$1.50  
Chapin-Stephens Co., Box, 30@30 1/2  
Richards Mfg. Co., Foot ..... 60

**Screws—Bench and Hand**  
Bench, Iron, doz., 1 in. \$2.50 @ 2.75; 1 1/4 ..... 3.25; 1 1/2 ..... 3.50 @ 3.75  
Hand, Wood ..... 20 1/2 @ 20 1/2  
Hand, Wood ..... 70 1/2 @ 70 1/2  
Chapin-Stephens Co., Hand ..... 70 1/2 @ 70 1/2

**Coach, Lag and Hand Rail—**  
Lag, Cone Point ..... 80 1/2  
Coach, Gimlet Point ..... 80  
Hand Rail ..... 70 1/2 @ 75

**Jack Screws—**  
Standard List ..... 70 1/2 @ 75  
Millers Falls ..... 50 1/2 @ 10 1/2  
Sweet Iron Works ..... 70 1/2 @ 75

**Machine—**

Cut Tread, Iron, Brass or Bronze:

Flat Head or Round Head,

Fillister Head ..... 50 1/2 @ 50 1/2

Rolled Thread, F. H. or R. H. Iron ..... 75 1/2 @ 75 1/2

F. H. or R. H., Brass, Nos. 8 to 14 ..... 65 1/2 @ 65 1/2

**Set and Cap—**

Set (Iron) ..... 75 1/2 @ 75 1/2

Set (Steel), net advance over Iron ..... 25

Sq. Hd. Cap ..... 70 1/2 @ 70 1/2

Hex. Hd. Cap ..... 70 1/2 @ 70 1/2

Rd. Hd. Cap ..... 50 1/2 @ 50 1/2

Fillister Hd. Cap ..... 60 1/2 @ 60 1/2

**Wood—**

List July 23, 1903.

Flat Head, Iron ..... 85 1/2 @ 85 1/2

Flat Head, Brass ..... 80 1/2 @ 80 1/2

Round Head, Brass ..... 77 1/2 @ 77 1/2

Flat Head, Bronze ..... 75 1/2 @ 75 1/2

Round Head, Bronze ..... 72 1/2 @ 72 1/2

Drive Screws ..... 87 1/2 @ 87 1/2

**Scroll Saws—**See *Saws, Scroll.***Scythes—**

Plain Grass, Cutting Edge Polished ..... \$6.25 @ \$6.50

Clipper, Bronzed Web \$6.50 @ \$6.75

Solid Steel, Web and Backs Polished ..... \$7.00 @ \$7.25

Bush, Weed and Bramble, Painted ..... \$6.50 @ \$6.75

Grain, Painted, Cutting Edge Polished ..... \$8.25 @ \$8.50

Clipper Grain, Bronze Web ..... \$8.50 @ \$8.75

**Seeders, Raisin—**

Enterprise ..... 25 1/2 @ 30 1/2

**Sets—Awl and Tool—**

Fray's Tool Handles, Nos. 1, \$12; 2, \$16; 3, \$12 ..... 30%

Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18 ..... 20 1/2 @ 10 1/2

**Garden Tool Sets—**American Fork & Hoe Co.:  
Rake, Shovel and Hoe, 1/2 doz. sets, No. 3 P F ..... \$7.25**Sets, Nail—**

Octagon ..... gro. \$3.50 @ 3.75

Buck Bros ..... 2 1/2

Elmore Tool Mfg. Co. ..... 30

Mayhew's ..... gro. \$0.99

Snell's Curved, Cup Pt. ..... 40 1/2

Snell's Kurled, Cup Pt. ..... 40 1/2

Victor Kurled, Cup Pt. ..... gro. \$7.50

**Rivet—**

Regular list ..... 75 @ 75 1/2

**Saw—**Atkins':  
Criterion ..... 40%

Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... \$15.00

Nos. 3 and 4, Cross Cut ..... \$20.00

No. 5, Mill ..... \$30.00

Nos. 10, 11, 96 ..... \$15.00

No. 1 Old Style ..... \$10.00

Special ..... \$5.25

Giant Royal Cross Cut ..... \$7.50

Royal, Hand ..... \$1.20

Taintor Positive ..... doz. \$0.75

**Shaving—**

Fox Shaving Sets, No. 30 ..... doz., net, \$24.00

Smith &amp; Hemenway Co.'s ..... 75%

**Sharpeners, Knife—**Pike Mfg. Co.:  
Fast Cut Pocket Knife Hones, 1/2 doz. ..... \$1.50

Mounted Kitchen Sand Stone, 1/2 doz. ..... \$1.50

Natural Grit Carving Knife Hones, 1/2 doz. ..... \$3.00

Quick Cut Emery Carving Knife Hones, 1/2 doz. ..... \$1.50

Quick Edge Pocket Knife Hones, 1/2 doz. ..... \$2.50

**Skate—**

Smith &amp; Hemenway Co., Eureka ..... 50%

**Shaves, Spoke—**

Iron ..... doz. \$1.25

Wood ..... doz. \$2.00

Bailey's (Stanley R. &amp; L. Co.) ..... 45%

Chapin-Stephens Co. ..... 30 @ 30 1/2

Goodell's, 1/2 doz, \$9.00 ..... 15 1/2 @ 10 1/2

**Shears—**

Cast Iron ..... 7 8 9 in.

Best ..... \$16.00 18.00 20.00 gro.

Good ..... \$13.00 15.00 17.00 gro.

Cheap ..... \$5.00 6.00 7.00 gro.

Straight Trimmers, &c.:  
Best quality Jap. ..... 70 1/2 @ 75

Best Quality Nickel ..... 60 1/2 @ 65

Tailors' Shears ..... 40 1/2 @ 45

Acme Cast Shears ..... 40 1/2 @ 45

Heinrich's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60 1/2; Japan Handles ..... 70 1/2 @ 75

Columbian Cutlery Co.:  
Sheep, 1900 list ..... 30 1/2 @ 35

Grass ..... 50 1/2 @ 55

Horse or Mule ..... 50 1/2 @ 55

J. Wiss & Sons Co.:  
Best Quality Jap'd ..... 60 1/2 @ 65

Best Quality Nickelled ..... 50 1/2 @ 55

Tailors' ..... 25%

**Tinners' Snips—**

Steel Blades ..... 20 1/2 @ 25

Steel Laid Blades ..... 50 1/2 @ 55

Acme Cast Snips ..... 40 1/2 @ 45

Forged Handles, Steel Blades, Berlin ..... 50%

Heinrich's Snips ..... 40%  
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in. ..... 33 1/2 @ 35  
National Cutlery Co.'s Forged Steel ..... 40  
Nagana Snips ..... 40  
P. S. & W. Forged Handles, 25 1/2  
W. R. W. ..... 50  
J. Wiss & Sons Co.:  
Wiss Forged Steel ..... 25%

**Pruning Shears—**

Cronk's Hand Shears ..... 33 1/2

Cronk's Wood Handle Shears ..... 33 1/2

Disston's Combined Pruning Hook and Saw, 1/2 doz, \$18.00 ..... 25%

Disston's Pruning Hook only, 1/2 doz, \$12.00 ..... 25%

J. T. Henry Mfg. Co.:  
Pruning Shears, all grades ..... 40%

P. S. &amp; W. Co. ..... 40 1/2 @ 45

Columbian Cutlery Co.:  
Hedge, Wilcut Brand ..... 60 1/2 @ 65

Lawn and Border, Wilcut Brand ..... 60 1/2 @ 65

Sheaves—Sliding Door—

Reading list ..... 40%

R. &amp; E. list ..... 15%

**Sliding Shutter—**

Reading list ..... 40%

R. &amp; E. list ..... 15%

**Shells—Shells, Empty—**Brass Shells, Empty:  
Climax, 10 and 12 gauge ..... 60 1/2 @ 65

Club, Rival, 65 1/2; First Quality ..... 60 1/2 @ 65

Paper Shells, Empty:  
New Rapid, 10, 12, 16 and 20 gauge, 25 1/2 @ 30

Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25 1/2 @ 30

Union, League, 10 and 12 gauge; Rival grade ..... 25%

New Climax, Deafness, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%

Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade ..... 20%

**Shells, Loaded—**

Loaded with Black Powder ..... 40%

Loaded with Smokeless Powder, medium grade ..... 40 1/2 @ 45

Loaded with Smokeless Powder, high grade ..... 40 1/2 @ 45

Union Metallic Cartridge Co.:  
New Club, Black Powders ..... 40%

Nitro Club, Smokeless Powders ..... 40 1/2 @ 45

Arrow, Smokeless Powders, 40 1/2 @ 45

Winchester:  
Smokeless Repeater Grade ..... 40 1/2 @ 45

Smokeless Leader Grade ..... 40 1/2 @ 45

Black Powder ..... 40%

**Shingles, Metal—Per Sq.**Edwards Mfg. Co.:  
Painted, Galv.

14 x 20 ..... \$1.25 \$6.00

10 x 14 ..... 4.50 6.25

7 x 10 ..... 4.75 6.50

Wheeler Corrugating Co.:  
Dixie, 14 x 20 in. .... \$4.05 \$5.05

Dixie, 10 x 14 in. .... 4.25 5.45

Dixie, 7 x 10 in. .... 5.25 6.70

**Shoes, Horse, Mule, &c.—**F. B. Pittsburgh:  
Iron ..... per keg \$4.10

Steel ..... per keg \$3.85

Burdens', all sizes ..... 1/2 keg \$3.90

**Shot—**

25-lb. bag.

Drop, up to B ..... \$1.80

Drop, B and larger ..... 2.05

Buck ..... 2.05

Chilled ..... 2.05

Dust ..... 2.30

**Shovels and Spades—**

Association List ..... 40 1/2 @ 45

Avery Stamping Co. .... 40%

**Snow Shovels—**

Long Handle ..... \$2.50 @ \$2.75

Wood and Mall, D Handle, \$2.65 @ \$2.90

**Sieves and Sifters—**

Hunter's Imitation, gro. .... \$9.50

Hunter's Genuine, per gro. .... \$12.00

**Sifters, Ash—**

Acme Rail Bearing Sales Co., Acme Automatic Ash Sifter, each, \$3.25; 1/2 doz. ..... \$39.00

**Sieves, Seamless Metallic**

Per dozen.

Mesh ..... 1 1/2 16 18 20

Iron Wire ..... \$1.05 1.05 1.10 1.20

Tinned Wire ..... \$1.15 1.15 1.20 1.30

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 Inch.

Mesh 18, Nested ..... doz. \$0.90 @ 0.95

Mesh 20, Nested ..... doz. \$1.00 @ 1.05

Mesh 25, Nested ..... doz. \$1.30 @ 1.40

**Sinks, Cast Iron—**

Painted, Standard list:

12 x 12 to 22 x 36 in. .... 60%

20 x 25 to 24 x 50 in. .... 50%

25 x 60 to 24 x 120 in. .... 30%

Barnes' low list ..... 60%

NOTE—There is not entire uniformity in lists used by jobbers.

**Skels, Wagon—**

Cast Iron ..... 70 1/2 @ 75 1/2

Steel ..... 40 1/2 @ 45

**Slates, School—**

Factory Shipments.

"D" Slates ..... 50 1/2 @ 55 1/2

Eureka, Unexcelled Noiseless ..... 60 1/2 @ 65

Victor A, Noiseless, 60 1/2 @ 65

**Slaw Cutters—See Cutters.****Snaps, Harness—**

German ..... 40 @ 40 1/2

Covert Mfg. Co.:  
Derby, 25%; Yankee, 30 1/2; Yankee Roller, 30 1/2

High Grade, 40%; Trojan ..... 40

Jockey ..... 25

**Snaths—**

Grass Scythe ..... 50 @ 50 1/2

**Snips, Tinner's—See Shears.****Spoons and Forks—****Silver Plated—**

Good Quality ..... 50 1/2 @ 60 1/2

Cheap ..... 60 1/2 @ 60 1/2

International Silver Co.:  
1817 Rogers Bros. .... 40 1/2 @ 45

Rogers &amp; Bros., William Rogers' Eagle Brand ..... 50 1/2

Anchor, Rogers Brand ..... 60

Wm. Rogers &amp; Son ..... 60 1/2

**Miscellaneous**

**Scythe Stones—**

Pike Mfg. Co., 1907 list:	
Black Diamond S. S. 3/4 gro.	\$12.00
Lamelle S. S. 3/4 gro.	\$11.00
White Mountain S. S. 3/4 gro.	\$9.50
Green Mountain S. S. 3/4 gro.	\$7.00
Extra Indian Pond S. S. 3/4 gro.	\$6.00
No. 1 Indian Pond S. S. 3/4 gro.	\$7.50
No. 2 Indian Pond S. S. 3/4 gro.	\$5.00
Leader Red End S. S. 3/4 gro.	\$5.00
Quick Cut Emery 3/4 gro.	\$10.00
Pure Corundum 3/4 gro.	\$18.00
Crescent 3/4 gro.	\$7.00
Emery Scythe Rifles, 2 Coat.	\$8.00
Emery Scythe Rifles, 3 Coat.	\$11.00
Emery Scythe Rifles, 4 Coat.	\$13.20
Balance of 1907 list 3/4 gro.	\$12.00
Lectro (Artificial) 3/4 gro.	\$12.00
Lightning (Artificial) 3/4 gro.	\$18.00

**Stoppers, Bottle—**

Victor Bottle Stoppers 3/4 gro.	\$9.00
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**Stops—Bench—**

Millers Falls 15-100	
Morrill's, No. 1, 10-100	\$10.00
Morrill's, No. 2, 12-100	\$12.50

**Door—**

Chapin-Stephens Co. 50-50-100	
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**Plane—**

Chapin-Stevens Co. 20%	
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**Straps—Box—**

Acme Embossed, case lots. 20-10-100	
Cary's Universal, case lots. 20-10-100	

**Stretchers, Carpet—**

Cost Iron, Steel Points, doz.	\$5.50
All Steel Sock, doz.	\$2.00
Excelsior Stretcher and Tack Hammer Combined, doz.	\$6.00

**Stuffers, Gause—**

Enterprise Mfg. Co., Stuffers and Lard Presses. 25-25-7 1/2%	
National Specialty Co., list Jan. 1, 1902. 30-30-5%	
P. S. & W. Co. 40-10-5%	

**Sweepers, Carpet—**

Goshen Sweeper Co. Per doz.	
Gilt Edge. 27.00	
Superfine. 26.00	
Majestic. 24.00	
Select, Nickered. 22.00	
National Sweeper Co. 27.00	
National Queen, Nickered. 25.00	
Martha Washington, Nickered. 20.00	
Monarch, Japanned. 18.00	
Perpetual, Japanned. 15.00	
Streator Metal Stamping Co. 25.00	
Model E, Sanitaire. 15.00	
Eureka. 24.00	
Streator Majestic, Nickered. 24.00	
Streator Conqueror, Japanned. 22.00	

NOTE.—Leading Manufacturers give the following rebates from list prices: 15% per dozen on three dozen lots; \$1 per dozen on five dozen lots; \$2 per dozen on ten dozen lots.

**Tacks, Finishing Nails, &c.**

American Carpet Tacks. 90-25-10%	
American Cut Tacks. 90-25-10%	
Svedes' Cut Tacks. 90-25-10%	
Svedes' Upholsterers'. 90-25-10%	
Gimp Tacks. 90-25-10%	
Lace Tacks. 90-25-10%	
Trimmers' Tacks. 90-25-10%	
Looking Glass Tacks. 6-10	
Bill Posters' and Railroad Tacks. 90-25-10%	
Hungarian Nails. 8-10	
Finishing Nails. 7-10	
Trunk and Clout Nails. 7-10	

NOTE.—The above prices are for Straight Weights.

**Miscellaneous—**

Double Pointed Tacks. 90-25-10%	
See also Nails, Wire.	

**Tanks, Oil and Gasoline—**

Wilson & Friend Co. Oil	
Gal. Gasoline	\$3.00
33	\$2.75
60	\$3.50
110	\$5.00

**Tapes, Measuring—**

American Asses' Skin. 50-10-50%	
Patent Leather. 25-10-50%	
Steel. 33-10-50%	
Chesterman's. 25-10-50%	
Keuffel & Esser Co. 40-10-50%	
Favorite, Ass Skin. 40-10-50%	
Favorite, Duck and Leather. 25-10-50%	

Metallic and Steel, lower list, 35-10-50%; Pocket, 35-10-50%.

Luffkins:	
Asses' Skin. 40-10-50%	
Metallic. 30-10-50%	
Patent Bend, Leather. 25-10-50%	
Pocket. 40-10-50%	
Steel. 33-10-50%	

Wichus & Hilger:	
Chesterman's Metallic, No. 34L. 25%	
etc. 25%	
Chesterman's Steel, No. 1038L. 25%	
etc. 25%	

**Teeth, Harrow—**

Steel Harrow Teeth, plain or headed, 8-1/2 inch and larger per 100 lb.	\$2.55 @ \$2.80
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**Thermometers—**

Tin Case, Cabinet, Flanac, Dairy, &c. 30-10-35%	
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**Ties, Bale—Steel Wire—**

Single Loop. 82-10-10%	
Monitor, Cross Head, &c. 70-10-10%	

**Tinners' Shears, &c.—**

See Shears, Tinners', &c.	
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**Tinware—**

Stamped, Japanned and Pieced, sold very generally at net prices.

**Tire Benders, Upsetters, &c. See Benders and Upsetters, Tire.****Tools—Coopers—**

L. & I. J. White. 20-20-50%	
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**Haying—**

Myers' Hay Tools. 50%	
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**Ice Tools—**

Gifford-Wood Co. 15%	
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**Miniature—**

Smith & Hemenway Co.'s, Davidson, doz., Nickel Plated, \$1.50;	
Gold Plated. \$2.00	

**Saw—**

Atkins' Cross Cut Saw Tools. 35-5%	
Simond's Improved. 33-5%	
Simonds' Crescent. 30%	

**Ship—**

L. & I. J. White. 25%	
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**Torches—**

Hammers, Engine, doz. \$1.50	
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**Transom Lifters—**

See Lifters, Transom.	
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**Traps—Fly—**

Balloon, Globe or Acme, doz., \$1.15 @ \$1.25; gro. \$11.50 @ \$12.00	
Harper, Champion or Paragon, doz., \$1.25 @ \$1.40; gro. \$13.00 @ \$13.50	

**Game—**

Imitation Oneida. 75-10-10%	
Newhouse. 50-5%	
Hawley & Norton. 55-10	
Victor. 75-10-10%	
Oneida Community Jump. 70-5%	
Stop Thief. 60%	
Tree Trap. 60%	
Hector. 75-10-10%	

**Mouse and Rat—**

Mouse, Wood, Choker, doz. holes, 12c	
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**Mouse, Round or Square Wire,**

doz. 8 1/2 @ 90c	
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**Marty French Rat and Mouse Traps**

(Genuine), doz. 8 1/2 @ 90c	
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**Crate lots. Small lots,**

No. 1, Rat. \$11.50	\$11.50
No. 3, Rat. \$5.75	\$6.50
No. 3 1/2, Rat. \$1.70	\$3.25
No. 5, Mouse. \$2.25	\$3.00

**Animal Trap Co.,**

Out o' Sight, Mouse, doz. \$0.60	
Out o' Sight, Rat, doz. 1.20	
Easy Set, Mouse, doz. .35	
Easy Set, Rat, doz. .85	
Out o' Sight Chockers, doz. holes. 12	
Out o' Sight, Tin, 5-hole, doz. traps. 75	

**Trowels—**

Disston Brick and Pointing. 25%	
Disston Plastering. 20%	
Disston "Standard Brand" and Gardner Trowels. 30%	
Kohler's Steel Garden Trowels, 5 in., \$1.80; 6 in., \$6.00.	
Never-Break, Forged Steel Garden Trowels, in bulk, net \$5.50	
In 1 doz. boxes, net \$6.00.	
Woodrough & McParlin, Plastering. 25%	

**Trucks, Warehouse, &c.—**

B. & L. Block Co.:	
New York Pattern. 50-10-10%	
Western Pattern. 60-10-10%	
Handy Trucks. doz. \$16.00	
Grocery Trucks. each \$15.00	
McKinney Trucks. each \$10.00	
Model Store Trucks. doz. \$18.50	

**Tubs, Wash—**

M'Gor's list, price per gross.	
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No. 0 1 2 5	
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Galvanized. \$67 \$79 \$89 \$99 10-10-10%	
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**Twine, Miscellaneous—**

Flax Twine:	
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No. 9, 1/4 and 1/2-lb. Balls. 21 @ 23c	
No. 12, 1/4 and 1/2-lb. Balls. 19 @ 21c	
No. 18, 1/4 and 1/2-lb. Balls. 16 @ 18c	
No. 24, 1/4 and 1/2-lb. Balls. 13 @ 15c	

No. 36, 1/4 and 1/2-lb. Balls. 15 @ 17c	
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Chalk Line, Cotton 1 1/2-lb. Balls. 24 @ 29c	
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Cotton Mops, 6, 9, 12 and 15 lb. to doz. 8 1/2 @ 19c	
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Cotton Wrapping, 5 Balls to lb. according to quality. 13 1/2 @ 19c	
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American 2-Ply Hemp, 1-lb. Balls. 12 1/2 @ 18c	
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1 1/2-lb. Balls. 12 1/2 @ 18c	
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American 3-Ply Hemp, 1-lb. Balls. 13 1/2 @ 16c	
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India, 2-Ply Hemp, 1 1/2-lb. Balls. 7 1/2 @ 9c	
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India 3-Ply Hemp, 1-lb. Balls. 7 1/2 @ 9c	
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2, 3, 4 and 5-Ply Jute, 1 1/2-lb. Balls. 9 @ 11c	
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Mason Line, Linen, 1 1/2-lb. Balls. 17c	
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No. 26 1/2 Mattress, 1/4 and 1/2 lb. Balls, according to quality. 30 @ 60c	
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Wool, 3 to 6 ply. B 6c; A 7 1/2c	
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**Vises—**

Solid Box. 60 @ 60-10%	
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**Parallel—**

Athol Machine Co.:	
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Simpson's Adjustable. 40%	
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Standard. 40%	
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Amateur. 25%	
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Columbian Hdw. Co. 40-5%	
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Slide. 65%	
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Fisher & Norris Double Screw, net each. No. 2 \$10.50; 3 \$16.00; 4 \$20.50; 5 \$27.00; 6 \$32.00.	
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**Fulton Mach. & Vise Co.:**

F. & R. Double Swivel Machinists' 40%	
Star, Solid Jaw, Machinists' 40%	
Holland's: 40-10-10%	
Machinists' 40-10-10%	
Keystone. 65-50-70%	

Lewis Tool Co.:	
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Adjustable Jaw. 30%	
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Monarch, 50%; Solid Jaw. 50%	
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Mussey Vise Co.:	
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Clincher. 40%	
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Parallel Bar. 15%	
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Perfect, 15%; Lightning Grip. 15%	
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Merrill's. 25%	
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Millers Falls Oval Slide Pattern. 60-10%	
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Parker's:	
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Victor, 20-25%; Regulars. 20-25%	
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Vulcan's. 55-60%	
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Combination Pipe. 20-25%	
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Prentiss. 20-25%	
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Rock Island. 25%	
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Snediker's X. L. 33%	
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Stephens'. 33%	
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**Saw Filers**

Disston's D 3 Clamp and Guide, doz., \$24.00, 30%; Clamps. 30%	
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Perfection Saw Clamps, doz. \$4.50	
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Reading. 60%	
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**Wood Workers—**

Fulton Mach. & Vise Co.:	
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F. & R. Double Swivel Coachman's 40%	
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Star Solid Jaw Woodworkers'. 60%	
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Mussey Vise Co.:	
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Lightning Grip, 15%; Perfect. 15%	
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Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	
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**Miscellaneous—**

Fulton Machine & Vise Co., Combination Pipe. 70%	
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Holland's Combination Pipe. 60-60-5%	
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Mussey's Quick Action Pipe. 40%	
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Parker's Combination Pipe. 40%	
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87 Series, 60%; 187 Series, 60-5%; No. 870, 40%.	
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Rock Island Pipe. 25%	
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**Wads—Price per M.**

B. E., 11 up. 60c	
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B. E., 9 and 10. 70c	
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B. E., 8. 80c	
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B. E., 7. 80c	
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P. E., 11 up. \$1.00	
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P. E., 9 and 10. 1.25	
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P. E., 8. 1.50	
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P. E., 7. 1.50	
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Ely's B. E., 11 and larger. \$1.70 @ 1.75	
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Ely's P. E., 12 to 20. \$3.00 @ 3.25	
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**Ware, Hollow—****Cast Iron, Hollow—****Store**



